

# The Mining Journal

## RAILWAY AND COMMERCIAL GAZETTE:

FORMING A COMPLETE RECORD OF THE PROCEEDINGS OF ALL PUBLIC COMPANIES.

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No. 2381.—VOL. LI.

LONDON, SATURDAY, APRIL 9, 1881.

WITH PRICE SIXPENCE  
SUPPLEMENT. { PER ANNUM, BY POST £1 4s

**M**R. JAMES H. CROFTS, STOCK AND SHARE BROKER,  
AND MINING SHARE DEALER,  
No. 1, FINCH LANE, CORNHILL, LONDON, E.C.  
ESTABLISHED 1842.

BUSINESS transacted in all descriptions of MINING Stocks and Shares (British and Foreign), Consols, Banks, Bonds (Foreign and Colonial), Railways, Insurance, Assurance, Telegraph, Tramway, Shipping, Canal, Gas, Water, and Dock Shares, and all Miscellaneous Shares.

BUSINESS negotiated in Stocks and Shares not having a general market value.

Every Friday a general and reliable List issued (a copy of which will be forwarded regularly on application), containing closing prices of the week.

MINES INSPECTED.  
BANKERS: CITY BANK, LONDON—SOUTH CORNWALL BANK, ST. AUSTELL.

SPECIAL DEALINGS in the following, or part:—  
30 Aberllyn, 11s. 20 Hindston, £1 16 3 30 Ruby.  
50 Almada, 9s. 100 Javali, 5s. 6d. 10 Richmond, £17 17s 6d  
10 Cambrian, 10s. 6d. 10 Leadhills, £2 8s. 9d. 10 Roman Gravels, £13 1/2  
20 Carnarvon Cop., 19s. 9 20 Marke Valley, £1 5s. 30 So. Devon, £16 16s. 3d.  
20 Devon Con., £12 7s 6d 75 North D'Erresby, 20 S. Indian Gold, £3.  
15 Derwent, £1 15s. 50 Nouv. Monde, £1 6s 3 10 So. Condurrow, £9 3/4  
50 East Crebor, 11s. 3d. 70 N. Penstruth, £1 15s. 25 South Darren, £1 16 3  
20 East Caradon, £1 5s. (call paid.) 50 So. E. Wynaad, £1 13 9 10 So. Penstruth, 10s.  
20 E. Roman Grav., 16s 6 50 Pandora, 13s. 3d. 50 Tanker, Gt. Con., £13 6  
70 East Van, £1 18s. 9d. 20 Pen-yr-Orsedd, 19s. 50 Port Phillip, 11s.  
50 Frontino, £4 18s. 9d. 75 Potosi, £1 10s. 50 Trevinc Con., £1 5s.  
40 Glenro, £2 1s. 3d. 75 United, Van Consols 75 United, Van Consols  
20 Glenro, 8s. 9d. 20 Prince of Wales, 17s. and Glyn, 8s. 0d.  
10 Grogwinion, £2 12s 6 (call paid.) 70 West Phoenix, £1 18 9 50 Wheal Crebor, £4 5s.  
100 Herodsfoot, 15s. 100 Parys Copper, 16s. 6d. 75 Pestarena, 6s. 9d. 50 Wheal Crebor, £4 5s.

\*\* SHARES SOLD FOR FORWARD DELIVERY (ONE, TWO, OR THREE MONTHS) ON DEPOSIT OF TWENTY PER CENT.

RAILWAYS—SPECIAL BUSINESS.  
FOREIGN BONDS—SPECIAL BUSINESS.  
AMERICAN STOCKS AND SHARES—SPECIAL BUSINESS.  
Fortnightly accounts opened on receipt of the usual cover in these and all Stock Exchange Securities.

JAMES H. CROFTS, 1, FINCH LANE, LONDON.  
ESTABLISHED 1842.

**N**ORTH D'ERESBY MOUNTAIN.—SPECIAL BUSINESS at close prices in the shares of this rapidly improving Mine.  
JAMES H. CROFTS, 1, FINCH LANE, LONDON.

**I**NDIAN GOLD MINES.—Business in all the leading Shares at CLOSE MARKET PRICES. Also, in FRONTINO AND BOLIVIA  
AND POTOSI.  
JAMES H. CROFTS, 1, FINCH LANE, LONDON

**M**R. W. H. BUMPUS, STOCK AND SHARE BROKER,  
AND MINING SHARE DEALER  
44, THREADNEEDLE STREET, LONDON, E.C.  
ESTABLISHED 1867.

BUSINESS transacted in STOCK EXCHANGE SECURITIES and MISCELLANEOUS SHARES of every description.  
RAILWAYS, BANKS, FOREIGN and COLONIAL BONDS.  
TRAMWAYS, TELEGRAPHS, and all the LEADING INVESTMENTS.  
Accounts opened for the Fortnightly Settlement  
A List of Investments free on application.

**M**RS. BUMPUS has SPECIAL BUSINESS in the undermentioned:—  
20 Antioquia, 9s. 6d Gold, 23s. 0d. 200 Panulcillo, £6 13s. 9d.  
100 Almada, 3 East Pool. 50 Pestarena.  
50 Arendal, £2 1/2%. 50 Leadhills.  
10 Blue Hills, £3 3/4%. 25 Emma, £3 7s. 6d.  
75 Bodidris, 20s. 6d. 100 Pen-yr-Orsedd, 21s 6d  
30 Bedford United, 43s 9 50 East Caradon, 21s. 0d. 15 Roman Gravels, £13 1/2  
100 Carnarvon, 20s. 6d. 20 Frontino, £5 0s. 0d. 25 Ruby, £8 17s. 6d.  
150 Chontales, 3s. 3d. c.p. 100 Glenro, 12s. 0d. 20 Richmond, £1 17s.  
50 Callao Bis., 28s. 6d. 100 Nouv. Monde, 25s 6 50 So. Devon Unl., £2 18 9  
20 Copiapo, £2 17s. 6d. 20 Great Holway, £5 1/2%. 50 So. Indian, £3.  
40 Cola do, £2 6s. 9d. 75 Hungarian Copper, 10s. 6d.  
5 Cape Copper, £4 3/4%. 10 Tincroft, 50 Tankerville, 14s.  
100 Don Pedro, 12s. 9d. 50 Indian Glenrock, 40s. 5 Van, £1.  
150 Devon Friendship, 21s. 3d. 25 Leadhills, 4s.  
15 Devon Consols, £12 1/2%. 100 La Plata, 31s. 0d. 40 Wheal Boys, £2 1/2%.  
60 Derwent, 30s. 0d. 25 Mona, £12 1/2%. 25 Wheal Grenville, £9 1/2%.  
50 Deva Moyer, £2. 50 New Trumpet Consols 50 W. Godolphin, £2 1/2%.  
3 Dolcoath, 100 Nouv. Monde, 25s 6 20 Wheal Crebor, £4 3s 9  
15 East Lovell, £4 1/2%. 50 New Peevor, £2. 60 West Holway, 28s.  
100 English Australian 30 New Quebrada, £5%. 50 Wheal Peevor.  
SPECIAL BUSINESS, at close prices, in the SHARES of all the principal HOME and FOREIGN MINES.

Mr. BUMPUS devotes special attention to these Securities, and is in a position to afford reliable information and advice to intending investors and others.

The following are recommended for an early and important rise in value:—  
WHEAL GRENVILLE. NEW TRUMPET CONSOLS.  
WEST GODOLPHIN. NEW PEEVOR.  
WHEAL BOYS. WEST KITTY.

Shares supplied at close prices on application.

WILLIAM HENRY BUMPUS, SWORN BROKER.  
OFFICES: 44, THREADNEEDLE STREET, LONDON, E.C.  
ESTABLISHED 1867.

**P**ENNINGTON AND CO., SWORN BROKERS,  
3, ROYAL EXCHANGE BUILDINGS, E.C.  
Transact business in every description of Stocks and Shares.  
ESTABLISHED 1869.—BANKERS: ALLIANCE.

**T**REVINC CONSOLS.—This mine continues to improve, and will, in our opinion, shortly occupy a prominent position. We most strongly advise immediate purchase of shares for a rapid rise. Price 25s.

SPECIAL BUSINESS in Devonport and Tiverton Grey's Breweries, New Gold Run, Gold Coast, and Chapel House shares.

**M**RS. GEORGE BUDGE, STOCK AND SHARE DEALER  
9, GRACECHURCH STREET, LONDON, E.C. (Established 28 years).  
ALL BUSINESS TRANSACTED FREE OF ANY CHARGE FOR  
COMMISSION.

Notice to Investors and Speculators.

Mr. BUDGE has DEALINGS in—  
Aberlyn, 150 Gold Coast. 25 North Busy.  
50 Bodidris, 50 Glenroy. 70 New Kitty.  
200 Bedford United, 20 Glenrock. 20 Nouv. Monde.  
10 Blue Hills, 20 Hungarian Copper. 50 Ooregum.  
85 Carn Camborne, 50 Indian Phoenix. 70 Prince of Wales.  
100 Devon Friendship, 40 Kit Hill. 20 Panulcillo.  
10 Devon Great Consols, 75 Lady Ashburton. 50 South Darren.  
100 Don Pedro, 100 Llandegla. 50 Tregos.  
50 Deva Moyer, 100 La Plata. 50 South Devon.  
250 East Craven Moor, 20 Marke Valley. 50 Tin Hill.  
50 Exchequer, 20 Mont Carbis. 25 West Kitty.  
100 English Australian, 30 Mona. 100 Wheal Jewell.  
100 East Devon, 150 New Gold Run. 50 West Phoenix.  
20 Frongoch.

SPECIAL BUSINESS in Frongoch, Grogwinion, Devon Great Consols, Gwton, Wheal Coates, Penhalls, New Kitty, Glenroy, Roman Gravels, Ystwith, South Devon, Bedford United, New Wye Valley, and West Kitty.

### BRITISH AND FOREIGN MINING OFFICES.

MESSRS. PETER WATSON AND CO.,  
18, AUSTIN FRIARS,  
OLD BROAD STREET, LONDON, E.C.  
BANKERS: THE ALLIANCE BANK (Limited).

**M**ESSRS. PETER WATSON AND CO.'S  
BRITISH AND FOREIGN MONTHLY MINING NEWS  
—STOCK AND SHARE INVESTMENT NOTES—MINES,  
MINERALS, AND METAL MARKETS—SHARE LIST,  
No. 828, VOL. XVI., for MARCH month, is now ready, and  
will be sent to customers on application.

Annual Subscription..... 5s. | Single Copy..... 1d.

MESSRS. PETER WATSON AND CO.,  
18, AUSTIN FRIARS, E.C.

**M**R. ALFRED E. COOKE,  
DEALER in BRITISH and FOREIGN STOCKS and SHARES  
of EVERY DESCRIPTION.  
76, OLD BROAD STREET, LONDON.  
ESTABLISHED 1853.

IMPORTANT NOTICE.  
The Prospectus of SORTRIDGE COPPER MINE will be found in to-day's  
Mining Journal. The Shares are STRONGLY RECOMMENDED, and will be  
LARGELY SUBSCRIBED FOR. Investors requiring an allotment should apply  
IMMEDIATELY (by telegram if possible) to MR. A. E. COOKE. It is expected  
that there will be a PREMIUM on the shares on MONDAY NEXT.

THE INVESTORS' GAZETTE.

Every operator in MINES, RAILWAYS, FOREIGN STOCKS, or AMERICAN  
STOCKS should read the above. Post free three stamps. Published every  
alternate Friday. New Number next Monday.

ALFRED E. COOKE,  
76, OLD BROAD STREET, LONDON.

(Over 14 years at the above offices, adjoining the Stock Exchange, with which  
they are in DIRECT TELEGRAPHIC COMMUNICATION.)

### STOCKS AND SHARES, FOREIGN BONDS, TELEGRAPHS, RAILWAYS, AND OTHER LEADING SECURITIES.

**M**RS. JAMES STOCKER, STOCK BROKER,  
2, CROWN COURT, THREADNEEDLE STREET, LONDON, E.C.  
Special Business at close prices in all British, Colonial, and Foreign Mine  
Shares. BANKERS: LONDON AND WESTMINSTER.

**J**OHN B. REYNOLDS,  
STOCK AND SHARE DEALER,  
37, WALBROOK, LONDON, E.C.  
ESTABLISHED 25 YEARS.  
BANKERS: LONDON JOINT STOCK.

WEST KITTY.

Mr. REYNOLDS has consistently recommended the purchase of shares in this  
Mine for investment, and is now justified in recommending them in stronger  
terms than ever. He is prepared to buy any number at the market prices, or to  
sell a limited quantity at a fair figure. He sees no reason for doubting that the  
shares will double in value ere long.

NEW KITTY.

Mr. REYNOLDS is also a Buyer of shares in this property, and advises purchase  
for investment.

WEST POLBRENN.

Mr. REYNOLDS is also prepared to treat for the purchase of shares in the above,  
which he likewise strongly recommends.  
See Mr. REYNOLDS's remarks on page 444.

**M**ESSRS. ENDEAN AND CO., STOCK AND SHARE  
DEALERS, 85, GRACECHURCH STREET, LONDON, E.C.  
ESTABLISHED 1861.  
BANKERS: LONDON AND WESTMINSTER, Lothbury; and  
BARCLAY, BEVAN, and CO., Lombard-street, E.C.

**H**ORACE J. TAYLOR, STOCK AND SHARE DEALER,  
(Late of the PORT PHILLIP AND VICTORIA [London] MINING  
COMPANIES, Limited.)  
38, GREAT ST. HELEN'S, LONDON, E.C.

BUSINESS TRANSACTED IN EVERY DESCRIPTION OF STOCKS AND  
SHARES.

I recommend the undermentioned mines for a certain rise:—  
1.—BWLCH UNITED SILVER-LEAD.  
2.—WEST LISBURNE SILVER-LEAD.  
3.—WHEAL COATES TIN.

For No. 1.—Important discoveries have recently been made, and another parcel  
of silver-lead ore is ready for market.

For 2.—Has large reserves of ore ground laid open, and the powerful steam  
machinery is in rapid erection.

For 3.—One of the best tin mines, and in eight months has sold tinstuff equal  
to one-fourth of its capital, whilst reserves of ore are being opened out.

BANKERS: CENTRAL BANK OF LONDON (Limited).

**M**RS. ALEXANDER DAVIDSON,  
STOCK AND SHARE DEALER,  
139, LEADENHALL STREET, LONDON, E.C.,  
OFFERS the FOLLOWING SHARES FOR SALE AT PRICE AFFIXED,  
PROVIDED they are NOT SOLD, WITHDRAWN, or PRICE ADVANCED:—

50 Porlrose, £0 17s. 20 Wheal Basset, £5 10s. 100 Wheal Jane, 15s. 3d.

70 East Caradon, £1 2s 6 50 Marka Valley, £1 5s. 50 So. Devon Unl., £2 1/2%.

30 East Crebor, 13s. 9d. 100 Mona, £12 16s. 3d. 80 West Crebor, offer.

25 Gwton, £1 8s. 9d. 95 Parys, £0 15s. 0d. 50 West Phenix, £1 15s.

50 Bodidris, £0 16s. 0d. 100 E. Wh. Rose, £1 1m. 150 South Darren, £1 14s.

90 Derwent, £1 12s. 6d. 90 Glenroy, £0 8s. 0d. 130 Tamar Sil.-Lead, 17s 6

150 E. Craven Moor, 15s. 100 Herodsfoot, £0 15s. 0d. 10 Van, £10 1/2.

50 Alma, and Tir., 9s. 0d. 70 Indian Glenrock, £6 11s. 3d. 50 Panulcillo, £6 11s. 3d.

30 Callao Bis., £1 2s 6 20 Wheal Grenville, £9 9s. 0d. 50 Richmond, £1 17s 9d.

50 Deva Moyer, £2 1/2 100 Mysore Reefs, par. 100 Port Phillip, £17 18s 9d.

3 Dolcoath, 100 Nouv. Monde, 25s 6 100 Hoover Hill, 25 pm. 100 So. E. Wynaad, £1 11 6

15 East Lovell, £4 1/2%. 100 Organos, £1 10s. 80 South Indian, £3 1s.

100 English Australian, £1 10 100 Oregoneum, £1 0d., pm. 130 Pestarena, 9s.

SPECIAL NOTE.—Any part of the above shares can be obtained.

Less prices might be accepted in some cases if offers were made.

**M**RS. W. MARLBOROUGH, STOCK AND SHARE DEALER,  
29, BISHOPSGATE STREET, LONDON, E.C.,  
Can SELL the following SHARES at prices annexed:—

40 Bedford Unit., 43s. 40 E. Roman Grav., 17s 6 50 Prince of Wales, 16s 6

25 Cambrian Gold, 20s. 0d. 20 East Chilverton, 35s. 50 Port Phillip, 9s.

25 Bwlch United, 100 Exchequer Gold, 4s. 6 50 Quartz Hill, 21s.

20 Carn Camborne, 20 East Lovell, £1 1/2%. 50 Richmond, £1 18 1/2%.

50 Carnarvon, 20s. 6d. 25 Frontino, 25s. 0d. 20 Wheal, £2 1/2%.

25 Callao Bis., £1 1/2. 25 Gunnislake (Gitters), 20 South Devon, £2 1/2%.

50 Consolidated, 10s. 3d. 25% 4/4%. 40 South Indian, £3 11 6.

40 Deva Moyer, 42s. 6d. 20 Indian Glenrock, £

**The List of Applications will close next Thursday, the 14th, for London, and on Saturday, the 16th April, for the Country.**

## **SORTRIDGE COPPER MINING COMPANY, LIMITED.**

Incorporated under the Companies Acts, with Limited Liability.

**IN 40,000 SHARES OF £1 EACH,**

Of which 21,000 Shares are issued as fully paid, in purchase of the mine, &c.

On the remaining 19,000 Shares 2s. 6d. per Share to be paid with Application, 5s. per Share on Allotment, and the remainder as required, or to be paid-up on transferring Shares.

**This Company will have no Royalty to pay until it has sold £60,000 worth of ores, and after that the Royalty will be only 1-20th.**

**DIRECTORS.**

**J. H. MURCHISON, Esq., F.R.G.S., 8, Austin Friars, London, Chairman of the Devon Friendship Company.**

**JOHN PETHERICK, Esq., F.R.G.S., late British Consul for the Soudan (Africa), 66, Tavistock Crescent, W.**

**H. S. STRACHAN, Esq., Copthall Buildings, Throgmorton Street, E.C.**

**SAML. YORK, Esq., Shifnal, Salop, Director of the Tankerville Great Consols Company.**

(The whole of the Directors are among the present proprietors of the mine, &c., and consequently Vendors to the Company.)

**BANKERS—IMPERIAL BANK, Limited, Lothbury.**

**SOLICITORS—Messrs. STACPOOLE AND SON, Pinner's Hall, Old Broad Street, London.**

**SECRETARY AND OFFICES.**

**MR. C. HARRISON SMITH, 8, AUSTIN FRIARS, LONDON.**

### **PROSPECTUS.**

The object of this company is to purchase and work the famous Sortridge Consols Mine (situate about three miles from Tavistock), which about 25 years ago yielded large and profitable returns of rich copper ores, and the shares in which were extensively dealt in at very high prices.

The shaft was sunk to about 150 fathoms, with a view, it is said, of coming to the junction of two lodes, which, however, was never reached, as the sinking was not continued deep enough. It is also believed (see Captain Skewis's Report annexed) that below the deep adit they followed only a branch, or unproductive part of the lode; and that the other portion, which was so productive above, is still untouched in the lower workings. In addition to this, very little was done in driving levels.

The last company obtained their returns altogether from the east side of a cross-course, which crosses the lode, and they did nothing to the west of it; but the lode has now been found there, composed of an exceedingly fine gossan, containing rich copper ore, though only within a few feet of the surface, and there is every indication that large and valuable deposits will be found at a comparatively shallow depth, like those formerly met with under the gossan on the other side of the cross-course, and under similar circumstances, in the original great discovery at Devon Consols, &c.

There are other promising lodes (of both copper and tin) in the sett, particularly a large tin lode, on which there are extensive old workings (the deepest point being only 20 fathoms), and from which the lessor has himself sold about £600 worth during some very limited operations carried on by him in the last few years; but the last company worked only the main copper lode, and did nothing to the others.

There are important facilities for cutting in a short time all the lodes at about 50 or 60 fathoms from surface by driving cross-cuts to them from the deep adit; and with regard to the copper lode where just found west of the cross-course, it will be seen by his reports that Capt. Daw says, though it is only a few feet below the surface, it contains rich copper ore, and that "a finer looking lode cannot be seen;" and he is of opinion that ore in paying quantities will soon be found at that point.

There are on the mine an excellent account-house and manager's residence, with all other necessary out-buildings; also a lot of tram iron, wagons, and timber. All the shafts are complete with ladders ready for working, and at least £20,000 worth of useful work is done for the present company in adits, shafts, and materials available for immediate operations.

The directors fully believe in the views of Capts. Daw and Skewis (in their annexed reports)—namely, that this is a fine mining property, and that such discoveries will be made as will result in opening up a large and profitable mine.

The following are the only contracts—namely:—

Dated 1st March, 1881, and 11th March, 1881, between Henry Spy of the one part and William Cripner of the other part.

Dated 5th March, 1881, declaration of trust by William Cripner.

Dated April 7, 1881, between William Cripner, for himself and others, of the one part, and Charles Harrison Smith, as trustee for the company, of the other part.

Copies of the above contracts, and the Memorandum and Articles of Association, can be seen at the offices of the solicitors, Messrs. Stacpoole and Son, Pinner's Hall, Old Broad-street, London, E.C., and subscribers will be taken to have notice of the contents of them.

Applications for shares to be made on the annexed form, and sent with deposit, at the rate of 2s. 6d. per share, to the bankers.

Copies of prospectus, with reports and form of application for shares can be obtained at the office, 8, Austin Friars, London.

**REPORTS ACCOMPANYING PROSPECTUS.**

Report by Capt. JOHN DAW, manager of the famous Arendal and Bratzberg Copper Mines, in Norway, and consulting mining engineer to the Devon Friendship Company.

*March 9, 1881.*—I lately went over the surface of this sett, and examined the burrows and backs of the lodes, together with the plans. I found that the large returns of rich copper ore came entirely from the lode east of the cross-course, and that nothing had been done on it to the west side. Since I was there I am told that a pit has been sunk on the back of the lode to the west in a very fine gossan spotted with rich copper ore, being 4 ft. wide. Specimens of which I have seen, and better could not be produced. I recommend that the adit be cleared and a cross-cut driven from it to intersect this copper lode under this fine gossan, the result of which, I believe, will be a rich course of ore. This is a fine piece of mining ground, being full 500 fms. long to the west of the cross-course. The cross-cut would be about 15 or 20 fms., and would likely take from three to four months to drive, and the lode would be intersected at from 30 to 40 fms. deep. At the same time I would recommend an air-shaft to be put down on the lode at the most convenient point. To the south of this copper lode there are two or three tin lodes, one of which is large, and has evidently yielded considerable quantities of tin. Looking at the immense results to the east of the cross-course, I have little doubt that under so fine a gossan at least similar results will be found to the west.

JOHN DAW.

*Tavistock, March 17, 1881.*—Just returned from Sortridge Consols. I am pleased to inform you the lode opened on to the west of the cross-course is full 4 ft. wide, composed of capel, quartz, gossan, and rich copper ore, although only a few feet below the surface; a finer looking lode cannot be seen. The men will shortly begin to clear the adit, and the air shaft will be started immediately. My opinion is ore in paying quantities will soon be found not far from surface. Capt. Skewis's report on this fine property will follow soon; not time for this post. He is much pleased with what he saw.

JOHN DAW.

Report by Capt. WM. SKEWIS, manager of the Gunnislake (Clitters), &c.

*Mining Offices, Tavistock, March 22nd, 1881.*—As requested by you I have made an inspection of the Sortridge Consols Mine, which is situated within one mile from the Horrabridge Railway Station, and about three miles from Tavistock. The sett is a large one, with a good clay-slate formation overlying the western slope of the Dartmoor granite. There are six known lodes of large size running through the entire length of the sett, three of which are copper and three tin, accompanied with some of the best and most mineral producing elvan courses in the district. There are also some very large

cross-courses crossing these lodes, which are of great importance for the production of mineral, especially where there are so many lodes of such size and character as are known to exist in this property.

The whole of the lodes cut be cut at a depth of 60 fms. by means of a cross-cut being driven north and south from the deep adit. In the last working it appears by the plan that a large quantity of copper was raised from one lode only, I am informed to the extent of £80,000. The shaft, I believe, is sunk some 40 or 50 fms. below the deep adit, and the levels driven about 60 fms. only. I am led to believe, by looking at the old plans, that the workings below the deep adit are at fault; that is to say, they missed that part of the lode which gave the ore above. If that be so, and I have strong reasons for believing it to be the case, the persons re-working this mine will have the benefit of this with a trifling cost. This lode, I find, was never found by the late company to the west of the cross-course, from the fact of its being hove in a contrary direction from that pursued by them in search of it. This fact is now proved by its being cut in costeen pit put down by the proprietors of the land, from which some very fine gossan containing copper ore has been taken.

The situation of this mine is a good one, being, as I before said, in a beautiful piece of clay-slate formation, overlying the granite, similar to that in which the best mines in the district have been found. The lode that has been worked upon was proved to be rich so far as the late company followed it, and it appears that this lode can now be cut west of the cross-course about 20 fathoms deep, by an adit level being driven 20 to 25 fathoms. When done I have belief a good discovery of copper will be made. Also the great north lode can be cut by driving a cross-cut about 12 fathoms from the end of the present deep adit. This lode has never been seen below the 20, where I am informed it is 30 ft. wide, and never worked upon by the late company, but the proprietors have since sold a large quantity of tin from it and that level and above. I am of the opinion that the cutting of this, together with the copper lode west of the cross-course, will make such discoveries as will result in opening up a large and profitable mine; in fact, I consider the work already done is all in favour of the present company. The term for the new lease, with 1-30th royalty, is exceedingly liberal, especially as all the buildings, together with so much plant, &c., are all on the property.

WM. SKEWIS

**FORM OF APPLICATION FOR SHARES.**

To the Directors of the Sortridge Copper Mining Company (Limited).

**GENTLEMEN,—**I request you to allot me shares of £1 each in the capital of the above company, and having deposited 2s. 6d. per share thereon with your bankers, I hereby agree to pay 5s. per share on allotment, the balance when required by the directors, or before I transfer the shares; and I hereby authorise you to enter my name on the Register of Members for the above shares, or for any less number you may allot me.

Dated this 1881.

I am, Gentlemen, your obedient servant,  
Name of applicant in full .....

Usual signature .....

Address in full .....

Occupation .....

**N.B.—**This to be retained by Bankers.

## **SORTRIDGE COPPER MINING COMPANY, LIMITED.**

The LIST OF APPLICATIONS will CLOSE on THURSDAY NEXT, the 14TH, for LONDON, and on SATURDAY, the 16TH APRIL, for the COUNTRY.

By Order,

C. HARRISON SMITH, Secretary.

# Goddard's Lead and Blende Mining Company, Limited.

CAPITAL £10,000, IN 10,000 SHARES OF £1 EACH.

Payable 10s. per Share on application, and 10s. per Share on allotment.

Prospectuses, containing Reports by Capt. Nottingham, of Pandora, Capt. Sandoe, of D'Eresby Mountain, and Capt. R. H. Vivian, of North D'Eresby Mountain, may be obtained by letter, addressed to The Secretary,—

E. BEAZLEY, 33, New Broad Street, E.C.

## SPECIAL NOTICE.

# The Basset and Buller Consols, Limited.

Comprising the East Wheal Basset, Copper Hill, and Wheal Buller Mines, In the parish of Redruth, Cornwall.

AREA, 180 ACRES.

CAPITAL £36,000, IN 36,000 SHARES OF £1 EACH.

Subscriptions are invited for 12,000 Shares at par, for the purpose of working the following Copper and Tin Lodes, all of which have been proved in this Company's property.

1st.—THE EAST WHEAL BASSET COPPER LODE. This lode was worked 90 fms. by the old company, and paid profits of .....	£ 60,000
It is standing whole from surface to a depth of 62 fathoms.	
2nd.—THE EAST WHEAL BASSET TIN LODE was cut into by the old company; it is of large size and great productiveness, and is standing whole.	
3rd.—THE COPPER HILL COPPER LODE was worked by tributaries under the old company at 5s. in £1 tribute, leaving thereby a profit of .....	300 per cent
on the outlay of working it. This lode is standing whole in this company's Wheal Buller sett.	
4th.—THE WHOLE OF THE COPPER LODGES, which in the adjoining mine, Wheal Basset (see plan) returned profits of .....	£360,000
are standing whole in this company's property. These lodes are expected to be as rich in this company's mines as they were in Wheal Basset Mine, the geological conditions being the same.	
5th.—THE COPPER LODE, which in the adjoining mine, North Basset (see plan) returned a profit of is standing whole in this company's property. This lode is expected to be as rich in this company's mines	80,000

as it was in North Basset Mine, the geological conditions being the same.

6th.—THIS COMPANY'S WHEAL BULLER COPPER AND TIN LODES are very numerous. Three of these were extensively worked for copper many years ago, and returned profits of over ..... £500,000. There are several copper lodes which are intact in this company's property, and are expected to be as rich as the three first-named, the geological conditions being the same. The whole of Wheal Buller lodes have been proved to be vast deposits of tin at depth.

7th.—THE GREAT FLAT TIN LODE, THE MASTER LODE OF THE DISTRICT, which is 10 ft. thick and immensely productive, and which gives its great value to all the adjoining mines (see plan) underlies the whole 180 acres of this company's property.

Prospectuses, with plans, can be had on application to the company's bankers—Messrs. PRESCOTT, CAVE, and Co., London; Messrs. BOLITHO, SONS, and Co., Penzance; and of the undersigned, at 85, Gresham-street, London, E.C.

The SUBSCRIPTION LIST will CLOSE on MONDAY, April 25th. By Order, ROBERT MAKEPEACE, Secretary.

## THE COLLIERY EXPLOSIONS IN STAFFORDSHIRE.

The efforts made to recover the 23 bodies that have been lying at the bottom of the shaft of the Whitfield Pit, Staffordshire, since Feb. 7 have not only been unavailing, and on Monday night resulted in another explosion, seriously injuring one man and doing considerable damage to the machinery. It will be recollect that on Feb. 7 a boy engaged in the workings of the colliery which belongs to the Chatterley Coal and Iron Company set fire to some tow, which then ignited the dust that was floating in the mine. The few men who were at work at once tried to put it out by throwing water upon it, but without effect, for the fire spread throughout the workings, and then ignited a quantity of gas. The result was that there was a terrific explosion, when the flames rose above the top of the shaft, destroying the head-gear, and setting fire to a train of coal wagons standing at some distance from it. The engine-house near to the upcast shaft was also destroyed. The son of the manager was killed whilst in the act of descending in the cage, whilst 23 men were killed whilst endeavouring to make their escape to the bottom of the drawing shaft. As the fire was raging at the time the bodies could not be recovered, and the shaft had to be sealed up, and was so kept until Monday last. Shortly after 12 o'clock on that night an attempt was made to recover the bodies, and to open out the mine for working. There was a scaffold fitted to the shaft so as to prevent the gas from escaping, and on this being let down some distance it came upon a cavity in the side, when a body of gas rushed upwards, and that was followed by another explosion, which was heard for a considerable distance. It had the effect of damaging the head-frames, disconnecting the guide-rods, smashing the cage, and destroying three rows of iron piping, nearly the whole of which fell to the bottom of the shaft. A man who was in the engine-house at the time of the explosion in making his escape broke his collar-bone and was otherwise injured. It is supposed that the opening caused by the cavity a mixture of air and gas took place, and this coming in contact with the fire in some part of the workings led to the explosion. We are not told whether any and what preliminary tests were applied for the purpose of seeing whether the fire at the bottom of the shaft was extinguished or not. We recollect on the occasion of the Oaks explosion there was a platform placed over a considerable quantity of ground with a pipe, and means were adopted to have the temperature of the shaft frequently taken. These gave indications that were well understood by the engineers, so that when they found the temperature at something like its normal state, they then unsealed the shaft, recovered the bodies, and commenced clearing out the water and other debris. This was done without accident, and we cannot see that if such precautions had been adopted at the Whitfield Colliery how another explosion should take place two months after the first one. It is evident that the shafts were not sealed up, so that there was air to keep the fire alive. In all probability, as the fire must be raging over a considerable area, and receiving additional aid by the explosion, it will be found necessary to pour water into the mine, which at all times is the most effectual method for extinguishing fires in collieries, as has been proved in so many instances at collieries where explosions have taken place, and the coal *in situ* set on fire. No doubt the difficulties to be encountered in now opening the mine will be greater than they were on the occasion of the first explosion.

## ECONOMICAL WINDING AND HAULING MACHINERY.

Few manufacturers enjoy a higher reputation for semi-portable and other engines than Messrs. John Fowler and Co., of Leeds, and the engine to which they are at present giving special attention—their patent Yorkshire compound engine—is confidently believed to be the best and most economical in the market for winding, hauling, or other purposes for which a semi-portable engine is required. The demand for them is increasing rapidly, and many have already been sent for winding purposes to the South African Diamond Fields, the success of which is evident from the number of duplicate orders which have since been received. An engine of 16-horse power of this class, with condenser, has lately been purchased by Mr. John Redshaw, of Zifta, under guarantee not to consume more than 2·5 lb. of coal per indicated horse power per hour. Carefully conducted experiments, superintended by the owner of the engine, have proved the consumption to be as low as 2·125 lb. per horse power per hour. The engine was driving two 4-ft. stones of a flour mill, diagrams being taken frequently during the trials. The fuel used was Cardiff coal.

It appears that the firm makes two classes of these engines—with and without boilers. For the independent or fixed type any kind of high-pressure boiler may be used. For the semi-portable the boiler is of the locomotive type, and constructed to work at a pressure of 150 lbs. per square inch. It is claimed that these engines combine all the advantages of the semi-portable engine with the economy and regularity of working which is only attained by the patent compound engines. If a sufficient supply of water can be obtained a condenser can be added, by which the advantages of condensing the steam can be obtained. To carry the condenser the wrought-iron side frames of the engine are prolonged, thus making the engine and condenser entirely self-contained. Among the advantages possessed by these engines special mention is made of the great economy of fuel; their simplicity and handiness in working, compactness and rigidity, cheapness in fixing, great regularity, and extreme portability. It has been long known that with the ordinary non-condensing engine a large portion of the available energy of the steam is wasted, on account of the high pressure at which the steam is discharged into the atmosphere. All attempts at improvement have been attended with such complication as to neutralise to a great extent the advantages gained from increased economy. But economy of fuel, if effected without complication and without increase in first cost, is of the utmost importance in all branches of trade. This Messrs. Fowler and Co. claim to have obtained after careful experiment in their patent compound engines, their experience having proved the use of steam up to 150 lbs. pressure to be practicable, safe, and most advantageous. To obtain the full benefit of the elastic or expansive force of steam, and thus introduce the most economical non-condensing engine ever attempted, they place a low-pressure cylinder by the side of the high-pressure cylinder. Each has a separate steam chest, with a slide valve worked by an ordinary eccentric. The steam, after expanding twice in the smaller or high-pressure, enters the steam chest of the larger or low-pressure cylinder, and expands in the latter about six times its original volume, and is discharged very little above the atmospheric pressure. The cylinders are so proportioned that the work done is equally divided between each, and the excessive shocks to which a highly expansive engine of the ordinary type is exposed are avoided.

The working parts connected to each cylinder are of the same size, and the engine can be started in any position of the crank as readily as an ordinary double cylinder engine, by means of a small mitre valve, which opens a direct communication between the steam chests of the two cylinders, and thus admits steam direct to both cylinders. In experiments with a 25-horse power nominal engine, giving off 80-horse power on the brake, the alternate maximum strains on the pistons, connecting-rods, &c., at the commencement of each stroke were about 2 tons in either cylinder, whilst if the same expansion had been attempted with a large cylinder only it would have involved an initial pressure of 8 tons. The rotation was very uniform with a heavy load at very low speeds, whilst the engine was evidently superior in economy to any but the best expansive condensing engines, the consumption of coal being 2·8 lbs., and of water 25·5 lb. per brake horse-power per hour. The engines on this system combine many improvements of detail. The cross-heads are forged on the piston-rods; the guide-bars are of wrought-iron, case-hardened; the connecting-rod brasses are securely bolted into a recess cut out of the solid forged head; the crank-shaft brasses are made in four pieces, adjustable horizontally and vertically; the valve-rod joints are very broad, and case-hardened. The cylinders are cast together, and the valves placed outside, where they are most accessible; they are fitted with highly sensitive quick-speed governors; turned fly-wheels of ample size, to transmit the full power of the engine; feed pump, worked by a separate eccentric; brass slack-boxes and valve and all the latest improvements.

# The New Penrose Tin and Copper Mine Company

(LIMITED).

CAPITAL £12,000, IN 12,000 SHARES AT £1 EACH.

Issue of the Unallotted Shares at par, or 20s. each, free from any further liability whatever.

Deposit 10s. per Share on application, and 10s. per share on allotment, the company being fully registered under the Companies' Limited Liability Acts, 1862 and 1867.

The Subscription Lists will remain open to the public for a few days only, and the Shares will be allotted in the order of application.

An important feature is that operations are being pushed on with vigour at the Mine. A deep adit, 40 fms. from surface, has been driven some 80 fathoms; and in a few fathoms more drivage will enable the company, by drainage of water, to sink the engine-shaft, so strongly recommended by the late Captain C. Thomas, of Dolcoath Mine.

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INSPECTING AGENT—Capt. W. HANCOCK, of Hony and Trelawny Mines.

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BANKERS—The CORNISH BANK, Helston, Cornwall.

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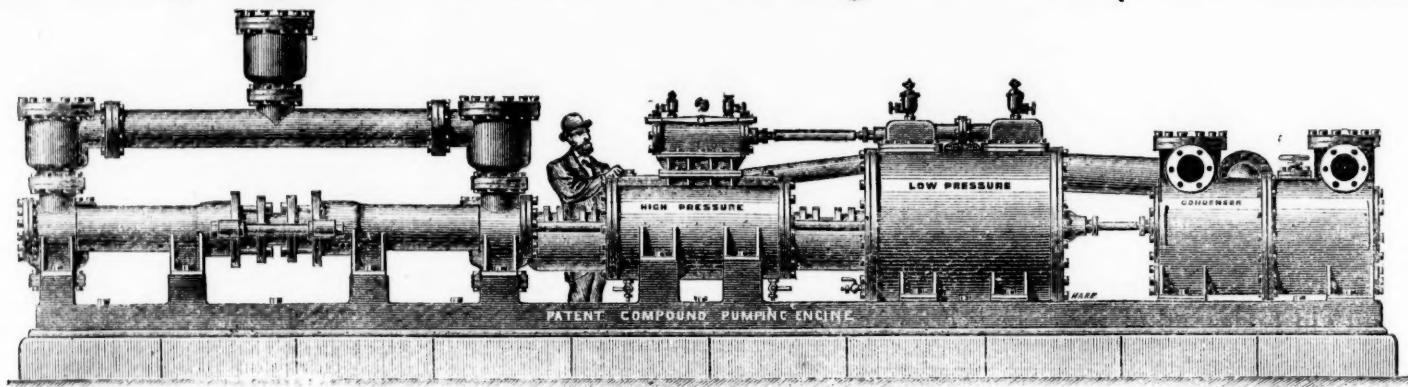
**PARIS EXHIBITION, 1878.**  
**GOLD AND SILVER MEDALS AWARDED for**  
**Steam-Engines & Boilers, also the Special Steam Pump,**  
**and Compound Pumping Engine.**



**TANGYE BROTHERS AND HOLMAN,**

CORNWALL HOUSE, 35, QUEEN VICTORIA STREET, LONDON, E.C.,  
 AND BIRMINGHAM, (TANGYE BROTHERS), CORNWALL WORKS, SOHO.

**TANGYE'S DIRECT-ACTING  
 COMPOUND PUMPING ENGINE,**  
 For use in Mines, Water Works, Sewage Works,  
 And all purposes where Economy of Fuel is essential.



TANGYE'S DIRECT-ACTING COMPOUND PUMPING ENGINE, WITH AIR-PUMP CONDENSER.

**TANGYE'S COMPOUND PUMPING ENGINE COMBINES SIMPLICITY, CERTAINTY OF ACTION, GREAT ECONOMY  
 IN WORKING, COMPACTNESS, AND MODERATE FIRST COST.**

This Engine will be found the most simple and economical appliance for Mine Draining, Town Water Supply, and General Purposes of Pumping ever introduced, and as regards Mine Draining, the first cost is very moderate compared with the method of raising water from great depths by a series of 40 or 50 fm. lifts. No costly engine-houses or massive foundations, no repetition of plunger lifts, ponderous connecting rods, or complication of pitwork, are required, while they allow a clear shaft for hauling purposes. In this Engine the economical advantages resulting from the expansion and condensation of steam are very simply and effectively obtained. The steam after leaving the high-pressure cylinder is received into and expanded in the low-pressure cylinder, and is thus used twice over before being exhausted into the condenser or atmosphere.

The following first-class Testimonials will bear evidence as to the efficiency and economy of the Engine:—

**TESTIMONIALS OF TANGYE'S COMPOUND PUMPING ENGINE.**

21' Newcastle and Gateshead Water Company, Newcastle-on-Tyne, Oct. 20, 1879.  
 36' x 10" x 48" COMPOUND CONDENSING STEAM PUMPING ENGINE.

Messrs. Tangye Brothers.

GENTLEMEN,—In reply to your enquiry as to the efficiency of the two pairs of Compound Condensing Engines recently erected by you for this company at our Gateshead Pumping Station, I have great pleasure in informing you that they have far surpassed my expectations, being capable of pumping 50 per cent. more water than the quantity contracted for; and by a series of experiments I find they work as economically as any other engine of the compound type, and will compare favourably with any other class of pumping engine. By the simplicity of their arrangement and superior workmanship they require very little attendance and repairs, and the pumps are quite noiseless. A short time ago I had them tried upon air by suddenly shutting off the column, and found they did not run away, thus showing the perfect controlling or governing power of the Floyd's Improved Steam-moved Reversing Vale. I will thank you to forward the other two pairs you have in hand for our Benwell Pumping Station.

(Signed) Yours respectfully,  
 JOHN R. FORSTER, Engineer.

The Chesterfield and Boythorpe Colliery Company (Limited),  
 Registered Office, Boythorpe, near Chesterfield, Oct. 1, 1879.

21" 36' x 12" x 48" DOUBLE RAM COMPOUND CONDENSING STEAM PUMPING ENGINES

Messrs. Tangye Brothers.

Supplied in January, 1878.  
 GENTLEMEN,—Referring to the above, which we have now had working continuously night and day for the last 12 months, we are glad to say that it is giving us every satisfaction. It is fixed about 400 feet below the surface, the steam being taken down to it at pressure of 45 lbs. per square inch. We can work the pump without any difficulty at 28 strokes per minute—224 ft. piston speed. The pumping power is enormous. The vacuum in the condenser being from 1½ to 13 lbs. The pump is easily started, and works well and regularly. The amount of steam taken being much less than we anticipated. We consider the economy in working very satisfactory indeed. The desire for power and economy at the present day will certainly bring this pump into great requisition.

Yours truly,  
 (Signed)

M. STRAW, Mana

**SIZES AND PARTICULARS.**

Diameter of High-pressure Cylinder	In.	8	8	10	10	10	10	12	12	12	12	12	14	14	14	14
Ditto of Low-pressure Cylinder	In.	14	14	18	18	18	18	21	21	21	21	21	24	24	24	24
Ditto of Water Cylinder	In.	4	6	5	6	7	8	6	7	8	10	7	8	10	12	12
Length of stroke	In.	24	24	24	24	24	24	24	24	24	24	24	36	36	36	36
Gallons per hour approximate		3900	6100	8800	6100	8800	12,000	15,650	8,800	12,000	15,650	24,450	12,000	15,650	24,450	35,225
Height in feet water can be raised with 40 lbs. pressure per square inch in cylinder		360	330	160	360	250	184	140	360	264	202	130	360	275	175	122
Ditto ditto ditto—with Holman's Condenser...		480	307	213	480	333	245	187	480	352	269	173	480	367	234	162
Ditto ditto ditto—with Air-pump Condenser...		600	384	267	600	417	306	335	600	440	337	216	600	459	203	203

**CONTINUED.**

Diameter of High-pressure Cylinder	In.	16	16	16	16	18	18	18	21	21	21	24	24	24	30	30	
Ditto of Low-pressure Cylinder	In.	28	28	28	28	32	32	32	36	36	36	42	42	42	52	52	
Ditto of Water Cylinder	In.	8	10	12	14	8	10	12	14	10	12	14	10	12	14	14	
Length of stroke	In.	36	36	36	36	48	48	48	48	48	48	48	48	48	48	48	
Gallons per hour approximate		15,650	24,450	35,225	47,950	13,650	24,450	35,225	47,950	24,450	35,225	47,950	24,450	35,225	47,950	47,950	
Height in feet water can be raised with 40 lbs. pressure per square inch in cylinder		360	230	160	118	456	292	202	149	397	276	202	518	360	264	41	
Ditto ditto ditto—with Holman's Condenser...		480	307	213	154	603	389	269	198	528	363	269	691	480	352	750	550
Ditto ditto ditto—with Air-pump Condenser...		600	384	267	191	750	486	337	248	660	450	337	864	600	440	937	688

**PRICES GIVEN ON RECEIPT OF REQUIREMENTS.**

Any number of these Engines can be placed side by side, to work in conjunction or separately as desired, thereby multiplying the work of one Pump to any extent.

NORTHERN DEPOT:—TANGYE BROTHERS, ST. NICHOLAS BUILDINGS, NEWCASTLE-ON-TYNE.

CORNISH CHINA CLAY.\*  
BY JAMES QUICK.

The art of pottery being one of those branches of industry which supply the immediate wants of the human race originated in the earliest period of mankind's existence, and at the present day no other of the useful arts has attained a higher degree of excellence in its various details, or has such a universal demand for its numerous products. In discovering suitable materials for the pottery manufacture, as well as in perfecting the different processes of the industry, a vast amount of talent in every age and in almost every nation has been expended, and for the antiquary and the historian the subject as a whole presents an inexhaustible mine of research. The story of Bernard Palissy, in France, wasting his time, his energy, and his money in his efforts to solve the mystery of the white enamel, and that of Baron Böttcher, the chemist, in Saxony, whose unremitting perseverance through a long period of years was at last crowned with success by the merest accident are vested with thrilling interest. The porcelain or white earthenware products of China and Japan, where the manufacture was probably started many years previous to the Christian era, had on account of their pure whiteness, their semi-transparent texture, and superiority of glaze long been the envy of European artists, when Böttcher, one day inspecting a white substance found in Saxony, and newly introduced as hair-powder, was struck with its adaptability to the requirements of pottery, and afterwards identified it as being the much-coveted kaolin, or the same material as that used by the Chinese. Subsequently kaolin in various degrees of purity or suitability for the manufacture of porcelain was found in several other parts of Europe, and it is now regarded by most geologists as consisting of the felspar of granite in a state of decomposition, and after passing through the raising process somewhat resembles ordinary whiting, but has a much greater density. The kaolin, or as it is more commonly called in England "china-clay," and sometimes porcelain clay, and at the Staffordshire Potteries, and which is the chief constituent of all the hard porcelain or finer sorts of earthenware is obtained almost wholly from the county of Cornwall and the adjoining district of Dartmoor. It is the purest or most highly-esteemed description of the clay known, and may be called the mainstay of our English manufacture, without which we could not possibly hold our pre-eminence over other nations in the excellence of our products, and in a commercial point of view the china-clay trade of Cornwall has a much greater importance than has hitherto generally been supposed.

The application of Cornish china-clay to the purposes of pottery is due to the enterprising spirit of William Cookworthy, of Plymouth, whose persevering efforts in the cause of English ceramic art are only surpassed by those of Josiah Wedgwood, the "founder" or rather the great improver, of the Staffordshire Potteries. Mr. Cookworthy opened a pottery at Plymouth in 1733,† and probably used at first only the inferior clays of Dorset and Devon. Owing, however, to the meagre information that is now extant about Cookworthy's labours the date when he discovered the china-clay, or first applied it to any practical use, cannot be accurately ascertained; but from his travels through Cornwall as a chemist, and his peculiar aptitude for geological research, its existence is likely to have been known to him long before he thought of turning it to account. Possibly, too, he may have used the clay for some time privately, reserving his knowledge from the public until a favourable opportunity occurred of divulging it, in accordance with that jealous spirit of secrecy so characteristic of discoverers in the eighteenth century. It appears to have been about the year 1755‡ that he found a stone at St. Stephens, Cornwall, which he proved to be identical with the Chinese *petuntze*, or, as it is now called, china stone, used for forming the glaze on porcelain, and which is the felspar of granite in a less advanced stage of disintegration than when considered as "clay." From a short account of the life of Cookworthy, published by his grandson,§ it appears that "he first found china clay and stone at Tregonning Hill, then in the parish of St. Stephen's, and afterwards in the domain of Bocconoo, the family seat of Thomas Pitt, nephew of the Earl of Chatham, and afterwards Lord Camelford." In 1768 Cookworthy, in company with Lord Camelford and others, secured by patent the exclusive use of Cornish china clay and stone, and with these materials carried on the porcelain manufacture for five or six years at Plymouth, that town, of course, being able thereby to boast that it is the place in England where the "hard" or true porcelain was first made. The adventure, however, ultimately proved a commercial failure, and in 1771 Cookworthy sold his patent to Richard Champion, a merchant of Bristol, and the works were transferred to that city. Soon afterwards Champion, in conjunction with other eminent potters, removed the undertaking to Tunstall, in the Potteries, and thus raised to the zenith of its completeness our present wonderful and extensive British earthenware industry.

Both Cookworthy and Champion appear to have exercised an extraordinary perseverance in discovering and mastering the details of porcelain manufacture, which in several ways they are said to have ultimately succeeded in very greatly improving. They attracted workmen from various potteries, and according to Marryat's History of Pottery, Bone, the great enameller, was employed for some years at Plymouth. It may be remarked that Wedgwood violently opposed both the patent taken out by Cookworthy and its renewal by Champion, as he himself, notwithstanding his many improvements in pottery, would never entertain the idea of one for his own discoveries.|| Champion's claim to merit as a manufacturer of porcelain seems to us to have been too little regarded by historians and pottery connoisseurs. In reply to Wedgwood's address to Parliament opposing his application for an extension of Cookworthy's patent Champion shows that he had been connected with Cookworthy nearly from the time of the granting of the original patent, and asserts that his hazard and expense were many times greater than those of Cookworthy, and that it was owing to his labours and his fortune that the Plymouth undertaking had advanced from "a very imperfect to an almost perfect manufacture."

Of late years, also, the Cornish china clay has been applied to a variety of purposes besides that of making porcelain, and, doubtless, ere long many more channels of usefulness may open up for it, and Cookworthy's discovery even yet attains still greater importance among our English commercial products. Indeed, it is calculated that only about one-third of the quantity now annually raised is employed in the home manufacture of porcelain, and more than another third of the total quantity is exported to foreign countries. The clay, on account of its bleaching properties, is used for "sizing" cotton goods in the Lancashire and Cheshire districts, and also very largely among paper-makers. It is also used in France in the preparation of ultramarine, and in Germany in connection with the manufacture of gilt mouldings. It has also been alleged that both on the Continent and in England the kaolin is widely used for adulterating food. In Hunt's Romances and Drolls of the West of England a strange superstition is recorded to the effect that a remarkable impression on a mass of rock called Tolcarne, situated in the neighbourhood of Penzance, was made by the heel of his Satanic Majesty as that monarch leaped from the earth whilst carrying off a dishonest miller who had mixed china-clay with his flour. It may, however, be stated for the comfort of consumers that the clay is perfectly harmless when taken in small quantities.

The district of Cornwall in which the largest deposits of china-clay have been found is in the neighbourhood of St. Austell, in the parishes of St. Austell, St. Mewan, St. Stephen's, St. Dennis, St. Endor, Roche, and St. Blazey, and there are deposits on a smaller scale in the eastern part of the county at Blisland and St. Beward, near Bodmin, and in the west near Helston. Lee Moor, a part of Dartmoor, near Plymouth, also yields considerable quantities of the

clay; but, as the largest works there are held by merchants who are large raisers in the St. Austell district, it can hardly be said that the Lee Moor enterprise enters into any competition with the Cornish trade.

The other principal materials used in the preparation of porcelain are bones and flint, the latter being employed for hardening the ware. Pegmatite,\* a substance found rarely, but which deserves more attention from geologists than has hitherto been bestowed upon it, is said to contain in its natural state all the necessary ingredients for porcelain. Inferior descriptions of clay used in the Potteries are obtained from the counties of Devon and Dorset, especially from the neighbourhood of Teignmouth, where the much used ball clay is found. At present there are about 100 china-clay works in Cornwall, leased or rented from the freeholders of the land, and it has been roughly calculated that about 1600 working hands altogether are employed. In Devonshire there are seven different clayworks, all in the vicinity of Lee Moor. And it may interest our readers to compare the present extent of Cornish clay raising with that of 70 years ago. From an article in the Annals of Philosophy for 1814 it appears that the preparation of clay for the manufacturer was in 1807 confined to the parishes of St. Stephens and St. Denys (St. Dennis), there being in all seven works—two at Hendra, in St. Dennis, and five in St. Stephens. One of the works was carried on by a company at Plymouth, who prepared the clay for sale, and the rest by manufacturing companies of Staffordshire and other places for their own consumption. Attached to each of the works was a quarry for granite. The clay was conveyed in carts to St. Austell and Charlestown, whence "the greater part, if not the whole," was shipped to Plymouth, and thence to the Potteries. In 1810 the quantity raised at Trethorva (one of the works in St. Stephens) was supposed to be about 300 tons, and 13 hands were employed. The water supplying the works was carried off by subterranean channels, which in some cases led to the shafts communicating with the mine adits in the rock beneath.

The method of raising the china-clay in Cornwall is interesting.† With the exception of a few modern improvements it is very similar to that pursued for many hundreds of years past by the Chinese clay raisers; and, indeed, many of the plans in clay raising and pottery manufacture invented and adopted by Europeans are merely unconscious repetitions of those practised long before by the workers in China and Japan. The clay is worked in open cuttings, which at some of the principal works are of very considerable extent and depth, the latter varying from 30 to 120 feet. Over the sloping sides of these workings streams of water are directed, which in their course carry with them the deposit of clay mixed with sand and mica, the proportions varying at the several works, but averaging about 8 tons of sand and mica per ton of china-clay. During the progress of the streams down the sides—or, as they are locally called, "stopes"—of the cuttings shovels are used for causing the separation of the clay and sand, and the several streams meet at bottom, carrying with them the liquid mixture into a reservoir, called a "sand pit," where the sand and much of the mica becomes deposited. At some works the liquid is then pumped, and at others it flows from the sand pit by natural gravitation into a series of divided channels, called "micas." These are about 2 ft. wide, and about 4 in. deep, slightly varying with requirements and size of streams to be passed, and in length from 100 to 500 feet. The channels have a slight fall, and have weirs or dams, called "traps," placed about 20 ft. apart, which, of course, check the stream at intervals, and cause the heavier portion of the mixture to fall to the bottom, and these latter are afterwards run off or re-washed, and sent away as refuse. Passing from the "micas" the solution, being clay alone, flows into large settling pits, varying from 40 to 50 ft. square and 6 ft. deep where it settles, the water running off as the deposit becomes denser, and the pit fills. From these pits the deposit is again sliced into large tanks, varying from 50 to 80 ft. square and about 6 ft. deep, where the clay is allowed to concentrate into a thin putty state, after which it is trammed or sliced into the drying kiln, called the "dry." Or if the clay is to be dried in the open air it is run off from the pits into "pans," which are excavations of from  $1\frac{1}{2}$  to 2 ft. deep, of various sizes, and sanded at bottom, and when sufficiently solid it is cut into square blocks, and ranged in rows on the ground, and being exposed to the influence of sun and wind soon becomes dry. But nearly all the works now have kilns for drying the clay, these varying from 50 to 200 ft. in length, and from about 9 ft. to 12 ft. in width. Messrs. John Lovering and Co., of St. Austell, china-clay merchants, have recently patented an invention for more perfectly refining the clay after it has been passed through the ordinary "mica drags." The machine is said to take out the small vegetable and other foreign substances, which cause "specks" in the clay, so objectionable in bleaching processes, and in high class china manufacture. If the invention proves successful Messrs. Lovering and Co. will have attained a most important and long-desired object.

It may be noticed that a marked feature of the Cornish county, and also of parts of Devonshire, are the numerous white and red coloured streams of refuse water, which respectively are discharged from the clay-works and from the iron mines, and flow through the green fields and valleys till they reach the sea, where they often form a serious obstacle to the prosecution of maritime affairs. Such, for instance, appears to have been especially the case some years ago with regard to the pilchard seine-net industry of Mevagissey. Mr. Matthias Dunn, of that place, informs the writer of this article that in the year 1818 the seine fishery of the town and neighbourhood was in a very thriving condition. But about that time§ the raising of china-clay began to be widely extended in the district of St. Austell, and the refuse white waters from the clay-works frequently polluted the sea miles from the shore, and, of course, thereby hindered the seine men from discovering the object of their search, and, moreover, drove the fish from the favoured places where the seines could be used. The number of seines at Mevagissey had dwindled from 44 in 1818 to two in 1867, and now no fish has been taken by a seine for many years. The town of Pentewan, situated at the mouth of the St. Austell river, possessing a large dock and a line of railway from St. Austell, also suffers very severely in its trade, owing to the immense quantity of sand which in years past have been carried from the clay-works to the sea, and which by certain winds is beaten up into a bar at the harbour entrance, although during the last three or four years as little sand as possible has been sent down to Pentewan. As may be supposed, a clear stream is rare in the neighbourhood of St. Austell, and we have been informed by a trustworthy authority that so accustomed are the horses and cattle there to drinking from the whitened streams that they do not care to drink clear water, and it is a by no means uncommon thing for a wagoner when going out of the district with his team to take a lump of clay with him to "muddle" any water that may not have clay in it before letting the animals drink.

As in excavating and preparing the clay no great amount of skilled workmanship is required only men of the common labourer class are, as a rule, employed. These are generally under the superintendence of foremen, or, as they are locally termed, "captains," who are men that have raised themselves by ability and experience. The wages of the men are 2s. 6d. for a day's work of  $7\frac{1}{2}$  hours, a rate of pay which—especially when considering the abundant time afforded for extra work and the facilities in Cornwall for cheap living among the poorer classes—compares most favourably with the wages earned by labourers of other avocations. The men, too, are not checked for rainy days, when they cannot work, and the occupation is a very healthy one. In some parts, also, a system of piece-work is adopted, under which the men usually make from 3s. to 3s. 6d. per day. With these earnings the Cornish labourer—renting perhaps a small respectable house for about 3s. or 4s. per annum, and if he be married his wife and children probably being also employed in the clay-works or in connection with the neighbouring tin or copper mines—may be said to rank in the social scale with skilled artisans in many other parts of England.

The arrangements for transporting the clay from one part of the

\* See Tomlinson's Cyclopaedia of Useful Arts.

† Vol. III. Old Series, p.

‡ The writer wishes to express his thanks to Thomas Kinsman, Esq., of St. Austell, China-Clay Merchant, for kindly revising his description of clay raising.

§ See an Article, by the writer of this one, on the Cornish Pilchard Fishers in Fraser's Magazine for February, 1877.

¶ A copy of Wedgwood's Address and Champion's Reply may be seen in the Library of the British Museum.

county to another are almost as complete as can be desired. The Cornwall Minerals Railway running from Fowey to Newquay passes through the important clay district of St. Austell, and connects the English and Bristol channels, and the Cornwall Railway, stretching the whole length of the county, has many small branches for conveying mineral and other commodities. It is noticeable that the clay sent to the English potteries is taken from Cornwall wholly by water, that for Staffordshire being shipped to Runcorn, and that for Worcester to Gloucester, from which places the material is carried by canal; and this custom of transporting the clay by shipping probably arose from the strong preference shown by Wedgwood for water carriage for porcelain rather than carriage by land, and his remarkable efforts in furthering the cause of canal navigation in the neighbourhood of the potteries.

No generally accepted conclusion has yet been arrived at as to the direct causes of kaolin formation. Indeed, no very great amount of scientific enquiry has yet been brought to bear upon the subject. Watt's Dictionary of Chemistry, Vol. I. says:—"It (kaolin) may be supposed to be formed from orthoclase or  $K_2OAl_2Si_3O_8$  by the abstraction of the whole of potash and silica, and addition of water," but offers no suggestion as to how this may by nature be brought about. J. H. Collins, Esq., F.G.S., public analyst for Cornwall, in a paper read before the Society of Arts\* in 1876, expresses an opinion that the clay is formed through the action of fluorine on the granite, because fissures which invariably contain minerals (tourmaline and mica), of which fluorine is an essential ingredient, are always present in the clay. Tin, too, is frequently found in connection with kaolin, which some geologists believe is brought there by the action of fluorine. To this theory of formation we are strongly disposed to incline. Mr. Collins has himself acted upon granite with dilute hydrofluoric acid and, without otherwise altering its appearance, changed it into kaolin. It may be mentioned that most of the kaolin found in Europe consists with slight variations of  $Al_2O_3 \cdot 2SiO_2 \cdot 2H_2O$ .

The following table shows some interesting statistics relative to the quantities of china clay and stone shipped from Cornwall and Devonshire during the last five years. The writer wishes to express his sincere thanks to those gentlemen who have kindly supplied information. It is to be regretted that the figures cannot be made more complete:—

	1876.	1877.	1878.	1879.	1880.
Charlestown:—					
China clay.....	34,016	51,870	65,177	66,056	59,091
" stone .....	426	647	882	338	
Palmouth:—					
Fowey:—					
Clay and Coastwise .....	61,070	*	*	*	*
" stone, " Foreign .....	14,760	365			
Hayle:—					
China clay.....	NIL.	179	321	455	716
" stone .....	NIL.		NIL.	195	NIL.
New Quay:—					
China clay.....	7,200†	6,320	4,060	3,500	2,000
" stone .....		2,000	1,000	500	316
Padstow:—					
China-clay " Coastwise .....	2,726‡	2,001	1,419	1,390	717
Par:—					
China clay.....	35,009§	46,000	45,647	55,024	56,194
" stone .....	15,000	21,000	20,729	18,704	15,500
Pentewan:—					
China clay.....	13,513	*	6,334	4,295	13,993
" stone .....				75	
Plymouth—Great Western Dock:—					
China clay and stone .....	28,093	27,019	16,981	18,996	18,311
Sutton Harbour:—					
Clay and stone .....	2,345				
Porthleven:—					
China clay.....	970	1,098	1,153	1,110	1,092
" stone .....	92	130	61	136	NIL.
Wadebridge:—					
China clay and stone .....	2,727**	1,500	1,300	1,000	800

\* We have been unable to obtain the quantities shipped from Fowey in these years.

† Coastwise and foreign—the other years all coastwise.

‡ Clay and stone coastwise.

§ Clay and stone foreign. In the other figures for Par the quantities of clay and stone are separate, but coastwise and foreign combined.

|| No shipments of china-stone.

¶ Cannot be given.

\*\* These figures are merely approximations.

No clay or stone has been imported from foreign ports through Gloucester since 1877, when 239 tons were received from Jersey.

The following are the quantities imported through Runcorn and Gloucester to the potteries during the last five years:—

Through Runcorn:—	China clay .....	50,222	64,000	60,000	66,000	68,000
from coastwise:—	" stone .....	10,633	18,000	24,0		

## Mining Correspondence.

## BRITISH MINES.

**BEDFORD UNITED.**—R. Goldsworthy, April 6: The lode in the 127 east is disordered by a large floor of capel, but this we think is only temporary. The driving at the 115 east is being continued by the side of the lode, consequently there is no change to report. The stopes are producing the usual quantity of ore. At Bridge lode everything is being pushed on in McCallan's engine-shaft as fast as the nature of the work will allow. We sampled a parcel of ore on April 1 computed to weight 80 tons.

**BELL VEAN.**—Capt. James Bray, April 1: In the end driving west from the cross-course the lode is 1 ft. 6 in. wide, presenting a very kindly appearance for an early improvement. We have completed the timbering of Gobbin's shaft down to the adit level. We shall now commence to do other necessary work which is required to go below that point. We are making good progress in cutting down the adit level from Mitchell's shaft to Bell's shaft, and shall put a tramroad in the same in order to bring away the stuff from the western part of the mine.

**BLUE HILLS.**—S. Bennetts, R. Harris, April 2: The 80 east end is worth 10/- per fathom; the lode producing far more copper than it did last week. The 42 west end is worth 8/- per fathom. The 42 east end is poor. The 30 east is worth 10/- per fathom.

**BLUE HILLS.**—S. Bennetts, R. Harris, April 7: The sinking of a winze has just been commenced in the bottom of the 80, on a lode worth from 20/- to 25/- per fathom.

**BODIDRIS.**—H. Hotchkiss, April 6: At Meadow shaft all is going on in a satisfactory manner. The ground in the bottom of the shaft has undergone a change again. We are now into a greyish limestone, which is rather more difficult for breaking, nevertheless I trust to get this work complete by the time specified in my former letter. In the eastern portion of the mine we are driving on with all speed, but there is no important change to report. The 60 is going forward in a very promising lode, but hard, and there is a mixture of lead ore and blonde throughout the end. The lode just over this end is very wide, and the ore scattered throughout, so that we have to break the whole down as we go on. I have still great faith that this run will, before long, lead us into a great body of ore, which will amply repay us for past outlay.

**BWLCH UNITED.**—W. Northey, April 6: The lode in the rise in the back of the 30 is 2 ft. wide, carrying soft ribs of lead ore from 2 to 3 in. wide, and on Monday next I shall place the rise men to drive west, to hole to the level driven in the back of the old stope. The stope in the bottom of the 50 is worth from 12 to 15 cwt. of lead ore per fathom. The cross-cut south at the 50 has been driven about two ft. and has passed through the lode into country rock. I have placed a full force of men to drive east on the lode, which is from 4 to 5 ft. wide, and of a very promising appearance, and letting out great quantities of water. We have completed the planking of Ritchie's shaft to the 30. The water has been forked to the back of 110; owing to the frost the water has risen to the 100. Very little has been done on the dressing-floors for the past week owing to the severe weather, but at the present time the pumping-wheel is at work, and I intend to commence crushing this afternoon. My estimated cost to drive 2 fms. in the cross-cut of the cross-cut on the north lode, at the 40 fm. level, is from 12/- 10s. to 13/-; also for a new jigger with eccentric from 55/- to 60/- This sum will purchase a good machine, which will soon pay for itself.

**BWLCH UNITED.**—W. Northey, April 6: After I closed up the cost-sheet and reports the 1st corps miners brought from the new lode at the 50 a splendid specimen of light blue killas with large cubes of carbonate of lime and lead ore.

**CARNARVON COPPER.**—J. Roberts, April 5: In the 90 the slide seems to be taking towards the sump in the 80, and is opening again wider, and letting out about the same quantity of water as it has since we cut it first. The water is going down in the sump slowly, and we are attaching a wire-rope to the engine to pull the water out from the sump, and we hope by next week to get it dry. The stope in the 46 is not looking so well as it has been.

**CATHEDRAL CONSOLS.**—S. Davey, jun., April 7: We are getting on favourably with the clearing of the mine adit, and hope shortly to be able to report the starting of the engine.

**CROOK BURN.**—Jacob Craig, April 1: Fair progress is being made in driving the cross-cut to cut the east and west vein; but as I am not aware of what angle the vein went through the shaft in the shale above the Tyne bottom limestone, not having the management of the mine at that time, I am unable to say what distance we will have to drive before cutting it, although I think it cannot be far. On the vein being cut I will let you know at once.

**COURT GRANGE.**—J. Pell, April 6: Saturday last being our pay and setting day the following bargains were set:—To drive the 30 and 14 east with the boring-machines at 7/- per fathom; bargain taken to pay all cost, including drawing, trammimg, &c., and engine cost, set to nine men. To stop the back of the 30 with boring-machines, at 2/- 15s. per fathom, paying all and every cost, set to six men. To stope west of Footway shaft, with six men from the back of the 14, at 9/- per fathom, paying all charges, including dressing cost. To stope in the back of the 14, east of footway shaft, at 8/- 10s. per ton, paying all cost, including dressing cost, set to six men. To stope with two men in the back of the 45, west of engine-shaft, at 3/- per fathom. The above stopes are worth about 12 to 15 cwt. per fathom respectively, except the 45, which is worth 8 cwt. per fm. A new pair of roller-shells have been fixed, and new elevator put in its place. All machinery is in good order, and last week's delay at crushing-mill will be made good during the next two or three weeks dressing. The water continues to maintain itself, the large reservoir at Craig-y-Pystill being only 5 ft. below overflow after a month's dry weather; this is very satisfactory, and the Brogman pond for our drawing wheel has also been made good.

**CWM PRYF.**—A. Francis, April 6: The tributaries' bargains still continue to look well, and yield a good quantity of rich lead ore, which is being dressed, and turning out well. Our ground has been laid open over the deep adit for more than 100 ft. long, and a large quantity of it is still standing, and can be worked away so as to leave good profits, as is now being done. In the waste heaps, so called, there is estimated to be over 50000t. worth of ore at the present low price of lead, and there has been an offer made to dress all this at 10s. in the 12, provided a small railway and other machinery is added at a cost not exceeding 800. The engine-shaft has been sunk 30 fms. under the deep adit, and at the 20 fm. level the lode has been cut, and the forebreast is in good ore, but unless a small capital is raised by the issue and sale of shares at some price to drain the mine under adit and work the extensive ore body discovered, the present shareholders cannot reap the benefit of it.

**CWMYSTWITH.**—J. B. Rowse, April 6: During the past fortnight the 8 has been vigorously pushed forward by a full pare of men in a large and productive lode, yielding 1/2 ton of lead ore per fathom. No important improvement has taken place in the 15 east of Edwards' winze since our last report, but the lode continues large, and some good stones of lead and blonde have been broken from it. The average yield of our stopes throughout the mine is about 14 cwt. of lead ore per fathom. Our progress on the dressing-floors has been very much interfered with for the last 10 days by very high winds and sharp frost, with, at present, no signs of a change.

**D'ERESBY MOUNTAIN.**—J. Roberts, W. Sandoe, April 6: At No. 6 the heading part of the lode is not quite so ore as it has been, but is large, and letting out more water. We believe from this, as we always have believed, that there are workings at the No. 5, on this side of the lode, and no doubt that this water is draining them. We are now driving south only. The stopes are throughout without any change. Being setting day on Saturday, we will forward a more detailed report next week.

**DEVON GREAT CONSOLS.**—Isaac Richards, April 7: Wheal Emma: Inclined Shaft: In the 190 east, east of Daws' cross-cut, the drivage is still being continued by the side of the lode, and the ground is without alteration. The 137 east is temporarily suspended.—New Shaft, New South Lode: In the 205 west, on the north part of the lode, the lode is 4 ft. wide, composed of capel, quartz, peach, mundic and a small quantity of copper ore. In the cross-cut north in the 190 east the ground is favourable for progress. In the 90 east the lode is 2 1/2 ft. wide, composed of capel, quartz, mundic, and a little copper ore.

—Railway Shaft: In the Railway shaft, now 8 fms. 2 ft. below the 190, the ground continues without any material alteration. In the 190 west, on the north part of the lode, the lode is 3 ft. wide, composed of capel, quartz, peach, mundic and a small quantity of copper ore. In James' winze, in the bottom of the 175 east, the lode is 5 ft. wide, and worth 3 tons of copper ore and 3 tons of mundic per fathom. In the 175 west, on the south part of the lode, the lode is 5 ft. wide, and worth 4 tons of copper ore and 3 tons of mundic per fathom. In Magor's rise, in the back of the 175 west, on the north part of the lode, the lode is 5 ft. wide, and worth 5 tons of copper ore and 3 tons of mundic per fathom. In the 160 west, on the south part of the lode, the lode is 3 1/2 ft. wide, composed of capel, quartz, peach, and a little of both copper and mundic ones. In Short's winze, in the bottom of the 160 west, on the north part of the lode, the lode is 4 ft. wide, and worth 5 tons of copper ore and 3 tons of mundic per fathom. In Clarke's winze, in the bottom of the 145 west, the lode is 5 ft. wide, and worth 3 tons of copper ore and 3 tons of mundic per fm., the same as in the 175 west, the lode is 2 ft. wide, producing a little copper and mundic ore.

**EAST CHIVERTON.**—R. Southey, April 7: The lode in the winze sinking below the 74 still maintains the improvements alluded to in my report a fortnight since; it is also letting out a greater quantity of water. Therefore, I have no doubt but what it will hold good right down to the 90. The winze sinking by six men, at 6/- 10s. per fathom. The lode in the 90 end, west of shaft, is still disordered, but I hope it will again improve in a few fathoms driving. I have taken the men and put them to stope, in order to get a parcel of lead for sale; and when the stopes are communicated with the winze we shall resume the drivage of the end with all possible dispatch. I am pleased to say the ground in the 63 cross-cut, south of the engine-shaft, is easier within the past few days; therefore, better progress will be made here.

**EAST CRAVEN MOOR.**—D. Williams, April 7: The 76 west has been extended from shaft 23 fms. in a vein 3 ft. wide, carrying spar, gossan, and a good mixture of lead ore, being saving work for dressing. A stope in back of the level in a vein 2 ft. wide, and worth 18 cwt. of lead ore per fathom, wrought at 80s. per ton of dressed ore. The 76 east has been extended from shaft 18 fms. 2 ft. in a vein 2 ft. wide, composed chiefly of quartz, sulphate of barytes, intermixed with occasional spots of ore. A stope in back of level by four men, worth 20 cwt. of lead ore per fathom. The 65 east has been extended from shaft 10 fms. 3 ft. in a wide, rough vein, composed principally of gossan, spar, with occasional stones of lead ore. A stope in back of the 65, west of shaft, is producing 12 cwt. of lead ore per fathom. A stope in back of the 54, west of shaft, I am pleased to inform you that, as anticipated in my last, we have reached the main lode, which at the point of intersection has been heaved a distance of 28 fms. south, and have driven 3 fms. upon its course, and so far as proved and seen into has more than realised our sanguine expectations, being upwards of 2 ft. wide between well-defined walls carrying gossan, spar, and lead ore, worth of the latter 20 cwt. per fathom, and judging from the extensive old workings westward we may reasonably expect a good run of profitable ore ground here for upwards of 30 fms. in length, where the lode has again been heaved by a powerful cross-cut. I propose early next month to drive a second cross-cut under this point from the 76, which will give the other end of the 54, west of shaft, I am pleased to inform you that, as anticipated in my last, we have reached the main lode, which at the point of intersection has been heaved a distance of 28 fms. south, and have driven 3 fms. upon its course, and so far as proved and seen into has more than realised our sanguine expectations, being upwards of 2 ft. wide between well-defined walls carrying gossan, spar, and lead ore, worth of the latter 20 cwt. per fathom, and judging from the extensive old workings westward we may reasonably expect a good run of profitable ore ground here for upwards of 30 fms. in length, where the lode has again been heaved by a powerful cross-cut. 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## TO THE METAL TRADE.

FOR COPPER, TIN, LEAD, &c., apply to—  
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## The Mining Market: Prices of Metals, Ores, &amp;c.

METAL MARKET—LONDON, APRIL 8, 1881.						
IRON.	£	s. d.	£	s. d.	£	s. d.
Pig, J.M.B., Clyde	2	8	4½	2	8	6
" Scotch, all No. 1	2	10	0	—		
Pars, Welsh, f.o.b. Wales	5	2	6	—		
" in London	5	15	0	—		
" Stafford	6	12	6	6	15	0
" in Tyne or Tees	5	10	0	—		
" Swedish, London	9	10	0	—		
Rails Welsh, at works	5	10	0	—		
Sheets, Staff., in London	8	0	0	—		
Plates, ship, in London	7	2	6	7	5	6
Hoops, Staff.,	7	0	0	—		
Nail rods, Staff., in Lon	6	0	0	6	10	0
STEEL.						
English, spring	11	0	0	18	0	0
" cast	30	0	0	40	0	0
Swedish, keg	15	0	0	—		
" fag. ham.	15	10	0	—		
LEAD.						
Alloys I., II., III., and IV.	£120	0	0	0		
" L.B.	15	0	0	—		
" W.B.	15	5	0	15	10	0
sheet and bar.	15	10	0	—		
pipe	16	0	0	—		
red	16	15	0	—		
white	21	10	0	23	10	0
" patent shot	17	15	0	—		
Spanish	14	5	0	14	7	6
NICKEL.						
Metal, per cwt.	15	0	0	16	0	0
Ore, 10 per cent. per ton	20	0	25	0	0	0
QUICKSILVER.						
Flasks, 75lbs., war.(nom)	6	5	0	—		
SPELTER.						
lesian	15	10	0	15	15	0
English, Swansea	16	5	0	—		
Sheet zinc	20	0	3	21	0	0
* At the works, 1s. to 1s. 6d. per box less for ordinary; 10s. per ton less for Canada; 1X. 6s. per box more than 10 quoted above, and add 6s. for each X. Tin-plate 2s. per box below tin-plate of similar brands.						

**REMARKS.**—Our markets continue dull, there still being but little eagerness shown to effect purchases, and this is, undoubtedly, a matter of great disappointment to the whole trade, for the quietude in its various branches has now been prolonged so long that the sanguine expectations which were formed at the close of 1880 as almost inevitable at the commencement of this year were not only then unrealised, but the whole of the first quarter has passed by without any perceptible improvement having occurred, and there is but little at the moment which presents itself to justify any anticipation of a speedy recovery. It not generally, it is often the case, that the first quarter of the year is one of greater prosperity than any other; but it is to be hoped that such will not have proved the case this year, for the inactivity in the markets has not frequently deepened into depression, at times almost, if not quite, as severe as that which existed in 1879; and, although it may not have been felt so keenly as it was then, on account of the excitement in the trade last year having left some fair profits to dealers and operators generally, yet the depression has prevailed and accompanying it there has been the not unusual consequence of some heavy commercial failures, and which has necessarily tended to shake confidence, so that we have now a feeling of uneasiness ruling, and upon the slightest symptoms of any pressure to sell there is great difficulty experienced in maintaining prices.

The greatest hope which can be held for a sharp rebound in prices, as well as a vast increase in the demand, must be founded to a great extent upon the continued inanimation in the trade, and which has been so pronounced for such a long time past. The large shipments of most metals to foreign parts which were made last year necessarily required time for consumption, as it is a well known fact that the shipments then effected were in many cases in excess of the wants of several of the markets to where they were exported; and to this cause in great measure must be attributed the lengthened inactivity in the trade at the present time. Another cause in which some way accounts for the quietude in our markets is the long time in which some of the Continental ports have been blocked. This latter drawback, however, is not likely to continue much longer, as the season is now so far advanced; and it is to be hoped that some large orders will be received not only from the Continental but also from other sources, so that some little stimulus may be given to our markets, since the present dulness in the trade is at times attended with very serious consequences. Seasons of activity generally follow those of depression, often succeeding one another in a very rapid and unexpected manner; and since the present quietude is contrary to anticipations, it may not unlikely be the case that a sudden change in the markets be made sooner than is generally looked for. All intending operators should, therefore, be on the qui vive, lest by too much dilatoriness on their part they lose their markets, and have to pay higher prices later on.

**COPPER.**—This market keeps extremely quiet, and prices easy. This is not a little surprising considering the much more favourable statistical position of the metal, as notified on the 1st inst. The great reduction which was then seen to have been effected in the in the total visible stock would cause the idea that prices must necessarily advance, and it would therefore be difficult to account for the receding tendency of prices were it not that regular trade was so considerably contracted. The total visible stock had decreased on the 1st inst. to 58,557 tons, against 62,403 tons on the 1st ult., being a reduction of 3,846 tons. It is a long time past since the stock was as limited as at the present time, while the price keeps extremely moderate, and would seem deserving of the notice of operators. Copper, however, is not an article which is now speculated in as much as formerly, although requiring much less capital than in past years, and as speculation has subsided, chiefly on account of the over production, it is satisfactory to see that at last a step has been made to overcome this great obstacle, which has not only depressed the market for so long a period, but has also deterred and checked speculative buying to an enormous extent, while at the same time sellers have been unable to realise a proper value for their copper, although on first sight it may appear undesirable that prices should be kept down, for holders have often to submit to heavy losses, yet to the trade at large it may, perhaps, be advantageous, for there is an increased probability of the stock being still further reduced, as supplies will doubtless thereby be kept limited, while there will be greater chance of a more speedy recovery in the demand. Although at the moment there is little appearance of any improvement in the demand, yet it would perhaps be well for regular buyers who have orders in hand and are holding them back for reduced rates, not to be too dilatory, for it should be remembered that for a long time past the market, notwithstanding its adverse circumstances, has been well sustained, indicating that sellers have no intention of materially reducing prices from their present level. At the public ticketing last Tuesday at Swansea 1920 tons copper ores of an average produce of 9% per cent. were sold at an average price of 1s. 8d. per unit.

**IRON.**—The improved demand which existed last week for Scotch pigs has not continued, and prices have to some extent fallen from what they were a week ago, and this is not a matter of surprise, for not only does the public stock in Glasgow continue to weekly increase, and now amounts to about 45,000 tons more than what existed at the commencement of the current year, but makers' private stocks are also said to be accumulating. That which gave tone to the market at the close of last year was that, although the visible stock had so greatly increased, yet private stocks had to a still greater extent diminished, making a less actual stock in existence, but this can no longer be reported in favour of the market

since, according to advices, both public and private stocks are being augmented. It is, however, said to be a usual occurrence during the first quarter of the year for the stocks to increase, but this year the stock has been stimulated to an unprecedented extent, not perhaps without some cause, for the severity of the weather at the early part of the quarter greatly retarded business, which has not since to any appreciable extent been improved. In manufactured there is little or no development in the demand, and prices have become somewhat easier, while the list houses have reduced the price of marked bars to the extent of 10s. per ton. It is, therefore, to be hoped that this reduction will give renewed activity to the demand, and that larger orders both for consumption and shipment will shortly be received. The only branch of the trade which shows any great activity is shipbuilding, and it is satisfactory to find there is every prospect of its continuing for at least the remainder of the year. The Glasgow warrant market has this week been inanimate, and business was done on Monday from 49s. 1½d. to 48s. 5d., improving on Tuesday to 48s. 9d., while on Wednesday transactions were reported chiefly at 48s. 7d. Yesterday being appointed a Glasgow holiday there was no market, and to-day business is reported at 48s. 8½d. to 48s. 6d. each.

The shipments last week were 10,421 tons, against 15,322 tons for the same week last year, or a decrease of 5401 tons, and which makes the total shipments this year 121,309 tons, compared with 205,967 tons for the corresponding period of 1880.

The number of furnaces in blast remains at 121, but the total visible stock has been still further increased to 541,045 tons, against 537,221 tons last week, or an increase of 3828 tons. The imports of Middlesbrough pig-iron into Grangemouth last week were 2098 tons, against 2643 tons for the similar time of last year, or an increase of 545 tons, and which makes the total increase of this year, compared with last, 11,054 tons. There has not been much anxiety manifested on the Middlesbrough market to do business, which is partly accounted for by the near approach of the quarterly meeting. Prices are fairly well sustained, and in a few instances higher rates are asked. The general price for No. 3 is 38s. 6d., and No. 4 40s. 7d., while a few sellers are quoting 38s. 9d. for No. 3, sharp delivery. For forward promptas there is but little eagerness shown to sell, but the nominal current rates are about 6d. above those quoted for cash parcels. There is very little enquiry for warrants, which are offered at 39s. 6d. to 39s. 9d. for No. 3. In Connells stock there is still further increase of 2138 tons, making a total stock now in existence of 161,803 tons. There is an increased make of hematites, but the requirements are also said to have been stimulated. Makers' stocks in this district are said to have been decreased by 9062 tons during last month, although the production is said to have been unprecedentedly heavy. The total shipments of pigs last week are said to be about 18,000 tons, chiefly to Scotland, while those of manufactured, including those of steel, have been 5093 tons.

The manufactured trade is said to be exhibiting a dull appearance, especially for bars, which are offering at 5s. 5d. Angles are quoted at 5s. 7d. and ship plates at 6s. to 6s. 5s., puddled bars being sold at about 3s. 7s. 6d. net.

On the Wolverhampton markets prices are lower all round, while marked bars are quoted at 7s. to 7s. 6d., sheets and plates having receded to a similar proportion. Inferior qualities of iron have been reduced by about 2s. 6d. per ton, and good qualities of pigs are selling from 1s. 3d. to 2s. 6d. lower than last advised. The reduction in the price of marked bars on the Birmingham market has not as yet strengthened buying, notwithstanding that the present value is said to be lower than for 13 years past. Buyers appear determined not to effect purchases until after the quarterly meeting, when it is thought, perhaps, there may be some concessions made in the price of the common qualities, as the cost of fuel is now cheaper than a few weeks back.

The Sheffield market is reported dull, and sales for all descriptions are difficult to effect, especially in the lower qualities of iron. There is not much to report from the Welsh markets; some fair orders which for some time past have been held in abeyance, have been placed, and which has given some slight tone to the market. According to the most recent advices from New York there is scarcely any change in the position of that market. Some fair sales are recorded at previous rates \$23 for No. 1 Gartsherrie and Glengarnock, \$24.50 for Coltness, and \$22 for Eglington, while scrap and old mills are quoted at \$27.50. From Sydney the latest advices declare a decided improvement, and the prospects are regarded as much brighter. There is a better demand for galvanised iron, and the price is firm at 23s. for 26-gauge, or an advance of 2s. 6d. Fencing wire has also increased in value, and more enquiry exists. Scotch pigs are also in greater request, and 8s. 6d. realised for No. 1 Clyde. Bar iron has advanced 5s., qualities equal to BBH selling at 12s. per ton.

**TIN.**—There is very little alteration in the position of this market, prices keeping fairly steady, and the demand rather inactive. There are two reasons to which the existing quietude in this market can be attributed, the first is the absence of any material speculation, and the second is the reduction which some of the tin-plate makers have made in their production. The first cause may not unlikely, in a measure, be influenced by the latter, as the consumption will probably be thereby curtailed, and which will prevent stock from being reduced as quickly as many holders might desire. The published statistical position of the market, however, need give no cause for anxiety, for according to the last returns there is no increase in the stock, while the constantly reduced stocks advised in the American ports is a feature of some importance, as it not only dispels the fear which prevailed some short time back that the re-shipments from that market would have to be effected, but it also indicates the possibility of fresh supplies having ere long to be sent to that country.

**LEAD.**—This market keeps extremely slack as regards the demand, and prices tend in buyers' favour, who, however, refrain from anticipating their wants in the immediate future, and limit their purchases to their passing requirements, which are as a rule for very small quantities.

**SPELTER.**—There is a marked absence of any activity, notwithstanding that prices here are reported lower than those ruling on the Continent. At the public zinc sale yesterday 95 tons were sold at 19s. to 19s. 2s. 6d. per ton.

**STEEL.**—A fair business continues to be carried through in rails, but other descriptions do not receive much attention from buyers.

**TIN-PLATES.**—The reduction in the make of tin-plates, referred to in one of our previous issues, is producing a favourable effect upon prices, which are a shade higher, but the demand for the most part part limited.

**QUICKSILVER.**—The importers of Spanish accepted 6s. 5s. on Monday, and the lower price has given rise to a considerable business. There is nothing offering from second-hands. The Board of Trade Returns for March show some improvement in the exports over previous months, and the Californian market is reported steady.

**TIN.**—Messrs. FRENCH AND SMITH (April 7) write: A steady business was done throughout the past month, both in French and English. Rates had a tendency to stiffen; consumption continues large, and at no point does production appear to be increasing. Stocks in America show a decrease of about 400 tons during March. The Dutch Trading Company's second sale took place on March 30, when 23,417 tons Bances were sold from 53s. to 53½s. fl., average 53½s. fl., equal to about 88s. 15s. laid down.

**COPPER AND TIN.**—Messrs. VIVIAN, YOUNGER and BOND (April 7) write: Chill bars improved somewhat on a continuance of light charters advised by Valparaiso for the month as 1900 tons fine, 61s. being paid spot, and up to 61s. 10s. forward, but latterly the continued absence of demand, chiefly from India, has exercised an unfavourable influence on the market, together with the reported sale of about 3000 tons Lotsa bars advised from Valparaiso, at a price said to be about 60s. per ton delivered here; with sales at 60s. 7s. 6d. to 60s. 12s., the market closes quietly. Heavy arrivals of tin have again caused an increase in stocks, the general figures, however, show favourably, and America has lately been buying more vigorously in the Straits. Prices have fluctuated between 87s. 6d. to 88s. 6d., closing firm at the latter quotation. The shipments from the Straits during March were 450 tons to Europe, and 425 tons to America. From Australia 775 tons to Europe, the quantity for America, included therein, being uncertain.

**Messrs. FRY, JAMES, and Co.**—There is very little to be said on the general terms of our market.—Copper has been fairly steady in value, but the gradual retirement of outside holders has supplied the market with parcels almost daily, and the last few sales of g.o.b. Chill bars have been at a decline of 5s. to 7s. 6d. a ton. The smaller charters from Chill are making a visible mark on the prospective supplies of that description, which will be felt latter in the year. 18s.: Scotch pig has rallied somewhat from the decline of two or three weeks ago, but the figures as to stocks and makers are against the claim of any substantial recovery.—Tin keeps very steady, and a very fair daily demand has existed since our last, the price of fine copper ranging between 88s. and 89s. 10s. cash, and is to-day 88s. 5s.—SPELTER has become easier to buy by 5s. to 7s. 6d. per ton.—LEAD is slow of sale, and prices have given way 5s. a ton on all kinds.—TIN-PLATES have been finding better demand, and 3d. to 6d. per box advance has been paid in some instances.

**THE MINING SHARE MARKET** has been somewhat slack since our last, and with very little general business doing. Prices remain about the same for those mines dealt in, and merely nominal for the general list. Those most in demand have been Carn Brea, Bedford United, Wheal Crebor, West Crebor, New West Caradon, Roman Gravels, East Van, East Roman Gravels, Prince of Wales, East Lovell Wheal Pevor, and others.

**TIN.**—No further change has taken place in the standards for tin ore in Cornwall since our last, and tin remains about the same. In shares there is very little doing, and most of the quotations are merely nominal.

Blue Hills, 3s. to 3s. Carn Brea have been as high as 13s. 6d., and leave off 13s. to 13s.; the meeting is called for the 14th, when a resolution would be considered for subdividing the shares and selling the forfeited shares. Dolcoath, 5s. to 5s. 1½d.; Cook's Kitchen, 12s. to 12s.; East Lovell, 4s. to 5s.; East Pool, 3s. to 3s.; South Conduor, 9

only started in February, 1880, and upon which £s. 8d. per share has now been paid, are selling at above 2d. per share, and there seems to be no reason why this property should not prove equally successful. The opinions of sound and practical mining advisers of the highest authority have been taken, and they all speak in terms of the greatest confidence of the value of the property, and the large quantities of rich ore which the lodes will doubtless yield. In order, however, to fully understand its positions and prospects the reports themselves should be attentively perused. It should be added that a good stream of water runs through the property, and will prove of considerable value for ore dressing purposes, &c.

The Cakemore, Causeway Green, and Lower Holt United Brickworks and Colliery Company, a going concern, already doing a large business (which it is proposed still further to extend), and having a total authorised capital of £20,000, invites applications for the unissued balance thereof—for 30,000 shares—bearing a preferential dividend of 7½ per cent., secured cumulatively upon the profits of the current and succeeding years, and also entitling the holders to participation in the surplus profits beyond such 7½ per cent. It is claimed (apparently upon very fair grounds) that this 7½ per cent. is effectually secured even in times of bad trade, and there is a reasonable prospect of considerably higher returns in ordinary times. The undertaking is considered to be a bona fide industrial concern, its specialty being the manufacture of blue bricks, which have now become a very important trade, and the company is stated to be already turning out about 160,000 bricks a week of the best possible quality, so much so that in the tests made by Mr. David Kirkaldy (the great authority on such matters) the Cakemore Company's bricks resisted a strain of 722 tons per square foot before they crushed, showing, in fact, about 35 per cent. greater resisting strength than brick made by the oldest and best known makers in that trade. There is no doubt also that the company possesses a great advantage in the fortuitous combination of two businesses well adapted to work together, and the products of both of which are of daily and universal use. The capital is regarded as moderate for what is stated to be the proved value of the property. The directorate is influential, and exceptionally practical, and altogether their proposed further development of a home industry promises to prove far better deserving of the notice and support of bona fide English investors than many of the foreign schemes, in respect of which so much capital is being drained out of this country.

Devon Great Consols, 12 to 13, and reported in good demand, owing, no doubt, to the great improvement in the 175 west, where the lode is now 5 ft. wide, and valued at 4 tons of copper ore and 3 tons of muriatic per fathom—a most important point.

Devon Great United, 2½ to 2½; good progress is now being made in getting the water out of Willespod's shaft, near to which it is said there is rich ore ground.

Kit Hill Great Consols, 1 to 1½; arrangements are being made for pushing on operations in driving the tunnel to intersect the several rich lodes of copper and tin.

South Devon United, 2½ to 3; in better demand. The mine continues to look well according to the manager's report. The sampling of copper ore will be about 450 tons.

South Wheal Frances advanced to 11½ to 12½ on the excellent report published last week in our columns from the newly appointed manager, showing that the mine is looking well.

Walsingham United, ½ to ½ prem.; it is stated that operations are being pushed forward vigorously; three points at least will be ready this week for driving, and the water will probably be in fork by April 23. The most important feature in this mine is the fact of the Great Sortridge lode passing through it. This adds to the value of the property.

North Busy, 1½ to 1½; an extraordinary meeting was held on Tuesday, and the resignation of Capt. Prisk was accepted in the hope of restoring public confidence in the concern, but a correspondent enquires whether Mr. Thorman Woodward, although he was partially whitewashed by his friends at the meeting, will publicly state whether he has been instrumental in procuring quotations in the *Mining Journal*; although as far as he must have known that the accounts were deceptive, if not absolutely false, and must also have known whose shares were being transferred, it is unfair to make fish of one and fowl of another.

Richmond, 17½ to 18; the usual telegram from the mine at Eureka, Nevada, states that the week's run was \$50,000, from 810 tons of ore. During the week the refinery produced doré bars to the value of \$35,000. The manager (March 16) reports that the 200, north from Cave, has been advanced 30 ft., in very favourable ground for striking an ore body. The 900 west drift has been advanced 10 ft., at which point we have struck the shale. We shall continue to drift in this level about 50 ft. into the shale, to assure ourselves of its being the main shale belt. In the rise in back of the 600, south from west drift, we have encountered some very good ore, but cannot yet tell its extent. All the chambers are looking well, and running out the usual quantity of good grade ore.

Ruby and Dunderberg, 8½ to 8½; the usual report and telegram appear in another column. The advices are considered to show excellent progress. The increased smelting returns are indicative of the good future work which may be looked for in this department, and it is stated that the lighting of the second furnace will be effected very shortly, as the augmented output of ore will necessitate extra smelting accommodation.

Eureka (Nevada) Silver Mining Company (Limited), 1½ to 1½; the prospectus of this company is reported to have been favourably received, and it is stated that the shares are being well applied for. The subjoined is considered good evidence of the value of the property acquired by this company, as it is supplied by a mining expert now in England who is well acquainted with the Eureka district. He says:—Notice the prospectus of the Eureka (Nevada) Silver Mining Company in the *Mining Journal*. Knowing this property personally, I can assure you the company will, on opening up the Eagle series of mines, make good returns of ore, the Williamsburg series being already in position to give profits.

Michipicoten, 1½ to 1½; the navigation of the St. Lawrence has already opened. The spring is reported as an unusually early one, and the first boats for Lake Superior are advertised to sail on April 25. Captain Opie and his staff sail on April 21. Good progress is being made in the manufacture of the machinery now under order.

Hultafall, 2 to 2½; the agent writes that he is crushing about 1600 tons of ore broken ready for treatment at the floors, and about 1200 tons broken at the mines, and that the mines are looking well.

Missouri, 10½ to 11; advices received this week, dated March 16, state:—Since the report of March 1, the 315 level north has been steadily improving; the rock in the driving has become softer and of a more genial formation for carrying mineral. The lode has just come in near the centre of the drift, averaging 7 in. in width in a clear opening, and is worth 1 ton to the fathom for ore. Stopes in this level are yielding as last reported. In the 245 level north the lode has improved, and promises soon to open out again into a rich run of ore. The stopes in this level are looking well. The shaft has been sunk 10 ft. since March 1. The lode runs north and south across it, and is filled with small pieces of mineral. The rock is much more favourable in all respects than it was during the sinking of the last lift, and presents generally a satisfactory appearance. Dressing and smelting are going on regularly.

Organos Gold, ½ to ½ prem.; it is stated that Mr. Green, who has been appointed superintendent at the mines, sailed from Liverpool on Tuesday, taking with him all the machinery required for working, including crushing and dressing machinery of the most modern and improved character. The whole of the machinery will be driven by a large turbine, for which a river flowing through the property affords ample power. Mr. Green should arrive at the mines in about two months, so that the shareholders from the end of that time may, it is thought, expect to receive regular reports upon their property. The erection of the machinery will probably be completed in about four months after the arrival at the mines.

Hungarian Copper, 1 to 1½; these shares are said to have been enquired for, and prospects are regarded as improving, now that the operations at the mines will be systematically conducted. Mr. Varga, the newly appointed manager, is highly spoken of. An announcement has just been made of the discovery of petroleum in association with the copper ore, and it is spoken of as the sure precursor of large ore deposits.

Flagstaff district shares are reported in good demand. The investigation of vouchers is, it is understood, almost complete, and the allotments are to be made at once. Fresh discoveries of rich silver ore at great depth are reported in the Vallejo Mine, immediately adjoining the South Star and Titus location, which now forms part of the property of the Flagstaff District Company. As the deepest workings of the Vallejo are some hundreds of feet below the greatest depth yet attained in the Flagstaff this continued richness of the vein would appear to be of the highest importance to the Flagstaff District Company.

In Lead Mine shares a steady business has been doing all the week, but the extent of the transactions reported is not large. Prices remain about the same, but there is said to be more disposition to buy on the part of the public.

Great Laxey, 17½ to 18½; the half-yearly general meeting of share-

holders will be held on Wednesday next, at Cannon-street Hotel, when no doubt a dividend will be announced.

Tankerville Great Consols, ¾ to ½, and in demand; as will be seen by manager's report rapid progress is being made at these mines in the several operations.

Wulch United, 2½ to 3½; it is reported that the discoveries at this mine have within the last few days assumed greater importance. Not only is the lode in the rise at the 30 improving, but also the new lode at the 50 east, which, according to mining experts, is nearing the third deposit of ore, the former having yielded large quantities of silver-lead.

Roman Gravel shares in great demand at 13 to 14: it is said that these mines are opening out the richest lead mines in this country, and that dividends will be increased.

Capt. Joseph Prisk, of the Lovell Mine, and the newly-appointed Manager of the Phoenix United Mines, desires it to be distinctly understood that he has no relationship or connection with any one of the same name in the Redruth District, and does not even know him.

The New York Pennsylvania and Ohio Railroad Company's estimated traffic receipts for the second week in March amount to \$131,053 against \$128,948 for corresponding period last year, showing an estimated increase of \$2105.

The Queensland National Bank will pay after May 1 the half-year's interest due at that date on the Brisbane Bridge 5 per cent. debentures. The coupons must be left three clear days for examination.

The balance due on coupon No. 15 of the Banque Franco-Egyptienne Société Anonyme, is now payable at the offices of the company in Paris, or at the Imperial Bank, Lothbury.

The letters of allotment to applicants for shares in the Innocoum Whitelead Company (Limited) have been posted to-day.

At Redruth Ticketing, on March 31, 1201 tons of ore of 8½ average produce, and containing 98 tons 1 cwt. of fine copper, were sold for £5497. 9s. 6d., being 4½ 9s. per ton of ore; 10s. 1d. per unit, or 54½ 11s. per ton of fine copper in the ore, and an average standard of 88½ 5s. Subjoined are the particulars of the two last sales:—

Date.	Tons.	Standard.	Produce.	Per ton.	Per unit.	Ore copper.
Mar. 24.	1956	... £95 3 0	... 6½	... £3 15 0	... 10s. 1d.	... 10s. 11½d.
"	1201	... 88 5 0	... 8½	... 4 9 0	... 10 11	... 54 11 0

Compared with the last sale, the decline has been in the standard 17. 5s., and in the price per ton of ore about 2s.

At Swansea Ticketing, on Tuesday, 1920 tons of ore of 9½ average produce, and containing 183 tons 10 cwt. of fine copper, were sold for £6997. 14s. 6d., being 5½ 11s. 5d. per ton of ore, 11s. 8d. per unit, or 58 2d. per ton of fine copper in the ore, and an average standard of 83½ 5s. 9d. for 9 per cent. produce. Subjoined are the particulars of the two last sales:—

Date.	Tons.	Standard.	Produce.	Per ton.	Per unit.	Ore copper.
March 15	1382	... £66 2 2	... 7½	... £4 4 7	... 11s. 10d.	... £59 3 10
May 5	120	... 83 5 9	... 9½	... 5 1 1 5	... 11 8	... 58 2

Compared with the last sale, the decline has been in the standard 27. 16s. 5d., and in the price per ton of ore about 5s. 4d. The Betts Cove ore gave an average produce of 8½ per cent.; and sold at 11s. 10d. per unit; Caveira, ore, produce 8½ per unit 10s. 8d.; precipitate, produce 45½ per unit 11s. 5d.; Berehaven, produce 8½ per unit 11s. 9d.; Virneberg, produce 13½ per unit 11s. 8d.; Moonta, produce 21 per unit 12s. 2d. There will be no sale on April 19.

**GAS SHARES.**—The principal business in these shares, according to this evening's report of Messrs. W. L. Webb and Co., of the Stock Exchange and Finch-lane, has been in Bahia, 17½; British, 32½ to 33½; Bombay, 5½ to 6; Commercial, 18½; ditto New, 14 to 14½; Continental Union, 21 to 21½; ditto, New, 14 to 14½; European, 19½ to 19½; ditto New, 9½; Gaslight, 1, 16 to 17½; ditto, B, 4 per cent. 80½ to 81; ditto, C, 10 per cent., 20½; ditto, D, 20½ to 20; ditto, H, 7 per cent. max., 12½ to 130; ditto, 4 per cent. debentures, 102; Hong Kong and China, 15½ to 16; Imperial Continental Union, 18½ to 18½; Monte Video, 15 to 15½; London, 18½ to 18½; Rio de Janeiro, 24 to 24½; South Metropolitan, B, 16 to 17½. Gas shares have recovered from the heavy drop, and are now steady at the price. For closing prices see list on the 12th page of Journal.

**INSURANCE SHARES.**—The principal business in these shares, according to this evening's report of Messrs. W. L. Webb and Co., of the Stock Exchange and Finch-lane, been in Alliance British and Foreign, 38½ to 39½; Commercial Union, 25½ to 26; Fire Insurance, 8½ to 8½; General, 8½; Imperial, 15½; Thames and Mersey, 12½; Indemnity, 11½; London and Provincial, 55½ to 5½; Lion, 2½ to 3; London, 6½; Merchants Marine, 12½; Marine, 11½; North British and Mercantile, 6½; Ocean, 8; Sun Life, 86; Rock Life, 2½; Universal Marine, 8½ to 8½. Insurances steady, but little doing. For closing prices see list on the 12th page of Journal.

**TRAMWAYS.**—The closing prices of this evening, as quoted by Mr. W. Abbott, of Tokenhouse-yard, are given in tabular form in the 12th page of Journal.

**RAILWAY AND GENERAL MARKETS.**—Referring to the course of business done to-day during official hours (11 to 3) Mr. Ferdinand R. Kirk, Birkdale-lane, writes:—*Opening.* Yesterday's rise in Turks and Unified has brought in sellers: the former are offered at 13½, and the other at 7½. Consols continue in active demand, and are now actually selling at 100½. Devon Consols, 11½ to 12½; Almada, 5½ to 7½; Van, 10½ to 11; Emma, 3½ to 3½; South Devon, 2½ to 3; Panuleillo, 6½ to 6½; Colorado, 2½ to 2½; Illinois Central can be sold at 8½ to 9½, and Erie at 8½. Trunks continue firm. Great Western of Canada have reached 16½.—*Closing.* Turks have recovered to 14, and Mexican new, 1½ to 1½ prem.; Penns, 71 to 71½. Trunks Seconds are offered at 91½; Devon Consols, 12½; Sierra Buttes, 1½ to 1½; Ruby, 8½ to 8½; Potosi, 1½ to 1½; South Indian Gold, 2½ to 3.

**GORSEDD AND MERRILY.**—The 90 east is now in a fine vein, and as soon as this level drains the north and south lode proved in the 70, the returns will more than double.

**WEST HOLWAY.**—The mine looks well. Good monthly parcels of lead will now be sold.

**GREAT HOLWAY.**—Another sale of lead takes place on Monday (25 tons) in addition to 50 tons of blonde, will be sampled in a few days.

The 60 stopes are altogether worth 8 tons of lead, or nearly 90½ per fathom. The cross-cut at the 110 is close to the lode, which if cut rich will cause great excitement in the shares, for the company will then possess an enormous "stope" of ground for a distance of half a mile on the lode's course. Other points at Brammock and Garden shafts are yielding well and likely to improve.

**SORTRIDGE COPPER MINE.**—We lately referred to this splendid property, intimating that a very influential company was about to be formed to acquire and work it. In another column of to-day's Journal will be found the prospectus; and as there will probably be a rush for the shares, the directors have fixed next Thursday the last day for receiving London applications, and next Saturday for those from the country. We have already reminded our readers of the great sensation caused some years ago by the wonderful discoveries made in this mine, and we pointed out how rich the lode was to the east of the cross-course, and that nothing had ever been done to the west of it. Lately the lode has been found there, presenting a magnificent appearance of fine gossan, mixed with rich copper ore, at only a few feet from surface. The company will soon commence operations, and in a very short time a great course of ore will probably be met with like what was found to the west of the cross-course, and under almost similar circumstances, at Devon Great Consols in 1844. In the latter case a shaft had been sunk 15 fms. deep in a large gossan lode by a former company, who then abandoned it. The Devon Consols Company continued the sinking, and in 2 to 3 fms. came upon that extraordinary lode which made that mine so famous and very profitable, their whole expenditure having been only about 2000L. Another important fact is that it is believed the last Sortridge Company followed a different and less productive part of the lode below the deep adit, and, therefore, the rich part would still be standing by the side of the workings below that level. There are other lodes, both of tin and copper, and all of them can be cut at 50 to 60 fms. deep by a cross-cut from the adit, and according to the reports this will make such discoveries as will result in opening up a large and profitable mine. There are 40,000 shares of 17. each, 2s. 6d. to be paid on application and 5s. on allotment, and a most important feature is that there is no royalty to be paid till 60,000L. of ore have been sold, and after that it is to be only 1-20th.

**GODDARD'S.**—This mine has now been formed into a limited company, with an exceptionally small capital. Three of the most reliable mining engineers of the district have made a thorough survey of the property, and are unanimous in their opinions (expressed in the reports contained in the prospectus) as to its present position and future prospects. The erection of machinery adequate to the capabilities of

the mine appears to be all that is now necessary to ensure large and lasting returns, and pay good dividends to the adventurers on their outlay.

**BWLCH UNITED.**—The remarks of Mr. A. Francis, which appeared in the Journal of March 26, commenting on the management of the above mine, were, it is right to say, merely his private opinion, for which he is alone responsible.

**WEST LISBURNE.**—No time is being lost in the erection of the steam machinery. The 10-ton boiler is now being got into place, as also the crushing and dressing machinery.

#### CAPPER PASS AND SON, BRISTOL,

ARE BUYERS OF

LEAD ASHES SULPHATE OF LEAD, LEAD SLAGS, ANTIMONIAL LEAD, COPPER MATTE, TIN ASHES, &c. and DROSS or ORES containing COPPER, LEAD, AND ANTIMONY.

#### C. H. WALKER AND CO., MINING AGENTS AND ENGINEER, VALPARAISO AND SANTIAGO, CHILE.

#### GEO. G. BLACKWELL, 26 CHAPEL STREET, LIVERPOOL,

PURCHASER OF

MANGANESE, ARSENIC, FLUOR-SPAR, WOLFRAM, BLEND, CALAINE, CARBONATE and SULPHATE of BARYTES, ANTIMONY ORE, CHROME ORE, MAGNESITE, EMERY STONE, PUMICE STONE, OCHRES and UMBERS, CHINA CLAY, LEAD ORE FOR POTTERS, TALC, PHOSPHATE OF LIME, &c.

#### HENRY WIGGIN AND CO.

(LATE EVANS AND ASKIN),

#### NICKEL AND COBALT REFINERS

BIRMINGHAM.

#### EDGAR JACKSON

## MINING AS A BUSINESS.

## Points to be Considered by English Capitalists, as Regards American and other Mining Investments.

Anyone who thinks of putting money into Mining can, by writing to me, have sent, post free to his address, a CIRCULAR, which will give him Valuable Points of Financial Utility, and Practical Views regarding Mining Investments generally, considered from a business standpoint.

J. J. WEST, 245, WABASH AVENUE, CHICAGO, U.S.

## Notices to Correspondents.

**GREAT LAXEY**—R. V. Kyrke (Nant-y-Ffrith, Wrexham).—As the general meeting is convened for Wednesday next, when an opportunity will be afforded for obtaining information as to the form in which accounts are kept, the publication of your letter is unnecessary. A detailed report of the meeting will be given in next week's Journal.

**LANGSTONE AND WEST OF ENGLAND MANGANESE COMPANIES**—A Bewildered Investor (Lower Norwood).—Your letter can only appear with your name attached.

**SIR**—Will some reader kindly inform me through the Journal what is the duty on scrap iron and old rails imported into the United States?—“SCRAP IRON.”

**REPLIES**—“N. N.”—Correspondents replying to letters should avoid the practice of repeating the statements to which they reply, as it unnecessarily lengthens their letters to an extent which often compels delay or rejection owing to the large demands upon our space.

**GERMAN SUBSCRIPTIONS**—By authority of the Imperial Postmaster General subscriptions for the *Mining Journal* will be received at every Post Office in the German Empire. All that is now necessary is to pay to the local postmaster 8½ marks quarterly in advance, and the *Mining Journal* will be delivered free at the subscriber's address.

**AN DEUTSCHEN ABONNENTEN**—Das *Mining Journal*, das in der Zeitungs-Preisliste der Deutschen Reichs' Postverwaltung für 1881 unter 464 Seite 150 verzeichnet ist, bei jeder Deutschen Postanstalt für den vierteljährigen Abonnementspreis von M 8½ bezogen werden kann.

**AVIS IMPORTANT**—Aux Abonnées Etrangères du “MINING JOURNAL.”—Le prix de l’abonnement au *Mining Journal* pour tous les pays de la CONVENTION POSTALE INTERNATIONALE est de 35 frs. le port compris. L’abonnement est payable par anticipation, ou par mandat postal international ou par aventure mandat sur Londres. Le montant, si l’on le veut, sera touché à domicile le fin de l’année, mais en ce cas nous tirons à vue, sans avis, et sur le dos de la note. L’abonnement continuera sauf avis contraire.

**CHILI BARS**—The quotation last week should have been 61½, to 61½ 15s., and not 60½, to 61½ 15s., as erroneously stated.

**CWM PHRYN**—“P. G. C.” (Westminster).—A meeting is to be held at Aberystwyth on Monday for passing resolutions that being insolvent it is advisable to wind up. It is understood that scarcely anything has been done at the mines, and that unless the public can be induced to subscribe capital—which can scarcely be hoped for from present shareholders, judging from the complaints made—there will be little or nothing for the creditors. It is proposed that Messrs. Griffith Williams and Thomas Williams, both of Aberystwyth, shall be appointed liquidators.

**Received**—“J. F. B.” (Denver)—“Regular Reader” (Berlin)—“D. H. M.”—“F. G. S.” (Bristol)—“Shareholder” (West Chiverton)—“Shareholder” (Pateley Bridge)—“Scrutator” should have appended his name to his letter, for publication. His remarks respecting the several mines would then, doubtless, have been thoughtfully considered by the parties interested—“R. B.” (Llanrwst): The letter was unfortunately mislaid, or would have received attention.

THE MINING JOURNAL,  
Railway and Commercial Gazette.

LONDON, APRIL 9, 1881.

## DRILLING OPERATIONS IN MINES, &amp;c.

At many mines throughout the kingdom amongst the most expensive work that has to be performed is that of drilling through rock and other strata. In most instances this is done by hand, and, of course, is not only costly but tedious, so that there is serious loss as well as a great inconvenience caused by the length of time occupied in doing by manual power what could be effected in so much less time by existing machinery. With these undeniable facts before us it may, therefore, be safely stated that the substitution of machinery for manual labour in underground workings of a certain description, such as we have incidentally alluded to, is one of the most important considerations in connection with mining economy, but which in past years appear to have been greatly overlooked by those in charge of our mines, who evidently preferred going along in the old rut to entering upon new paths with which they were unacquainted. But of late years there has been a great change for the better, and mining has made considerable advance in scientific arrangements and working by attracting to it a higher and more cultivated intelligence, so that the practical and economical working of our mines has been brought into more complete harmony with the progress of mechanical and scientific research. And the change will still go on, seeing that the supervision and management of most of the mines will now only be entrusted to those whose fitness for the duties has been fully tested by a most thorough examination, in which mechanical as well as mining knowledge form a part. Still, there is now a vast as well as a grand, and in the highest sense a most interesting field open for the development of the talents of those who aspire to take a leading part in the management and future success of our mining industries. In this respect nothing can be more attractive, and, at the same time beneficial, in the truest sense of the term, than machinery for superseding hand labour, as by it the cost of raising minerals of every description will be reduced, and so allowing mineowners to compete on more equal terms with foreigners, and to sustain our supremacy abroad, and continue to a still greater extent than at present the progress and development of our vast mineral resources. Such must be the result of the advance of scientific research and the stimulus given to inventors by a better appreciation of mining machinery. Amongst the appliances for mining and tunnelling operations considerable attention has been paid by engineers to the production of machines for drilling through mineral of every description, and it cannot be said that they have been otherwise but successful, so that the requirements of mineowners, large or small, can be readily furnished. Tunnelling through the hardest rock for railway purposes for distances of miles, or drifting for a few yards in a mine, can be easily accomplished, effecting, of course, a great saving of time and money. Yet with these advantages so clearly demonstrated drilling by machinery has not made that progress in this country that might reasonably have been expected.

It would be an invidious task to attempt to go into the comparative merits—if such could be done—of the various drills that have been brought under the notice or mine and quarry owners, as well as others, but as they are all constructed on sound mechanical principles—that they can do the work which is required of them—we believe admits of no question. Drilling by hand is most laborious work, and, left to unskilled men, without the supervision of those who are really efficient in the work, has led to many disasters of a most fatal character. Of this we have an instance in the case of the Oaks Colliery, where the explosion was caused by the driving of a stone drift by a few men, who were in a hurry to get “through.” Where the work is not of a heavy character, and of comparatively moderate length, hand drills have been found most effective, driving through at a good rate, and where they are started at opposite ends after a fair survey they have met quite straight. This accuracy would be difficult to accomplish by hand. In large undertakings, however, it is usual to work with steam, or some other motive power, when a vast amount of work is accomplished in a short time. Compressed air, so far as mines are concerned, has been a most effective one, and has been adopted, not only in England but in France on a more extensive scale. In some of our own mines we have found them doing good work, more especially in connection with compressed air. The latter power is a valuable one underground, for in driving a long stone drift, or similar work, the drift could be thoroughly ventilated by it, without putting up brattice to carry the air to the face of it, whilst the pipe conveying the air could always be continued so as to have an ample supply of it close to the men at work, so keeping the place cool and agreeable. But compressed air, in addition to driving drills,

can at the same time be utilised for other purposes, for it can be made to pump water from dip workings at the extreme end of a mine, and drive the gas from the goaves immediately behind the working places, whilst it is admitted to be the only power suitable for coal-cutting machinery. Compressed air, therefore, used for drawing and other purposes could also be at the same time brought into operation for drills without extra cost. Still, the value of drills does not appear to have been recognised by our mineowners to anything like the extent it has been on the Continent, and this is all the more surprising seeing that drills patented by inventors are extensively adopted by the largest mining companies in France in particular. In France, it may be said, the minerals belong to the Government, and the concessions are on a vast scale, for the Aniche Company have an area of 29,000 acres; the Anzin Company a field 18 miles in length, by six miles in width, employing about 15,000 men, the field extending to the Belgian frontier; the Lens Company 14,000 acres, and the Courrier Company 11,000 acres. In these vast fields the mineral worked is coal, and on an extensive scale, and several descriptions of rock-drills are in constant work, and are found to act in the most admirable manner, doing the work well, and most economically; and it is somewhat surprising that they are not so well appreciated by the colliery owners at home as they are abroad, more especially as on the Continent the wages paid to miners is so much lower than with us. This in itself shows the value, from an economical point of view alone, of drilling machines as compared with hand labour.

At the pits belonging to the Bethune Company they have machines on the Warrington, Darlington, and Blanzy systems, worked by compressed air, the steam cylinders being 20 in. and the air cylinders 24 in. At some of the pits of the Aniche Company there are rock-drills worked by air-compressing machinery, and the same appliances are to be found at many other mines in the North of France, including the Haveluy pits, where several long stone drifts have been driven by the Dubois and François drills, which appear in many respects to be similar to those made in England, so that what may be termed as mechanical hoisting has been most successful. The machine consists of a gun-metal cylinder, in which a piston freely moves, the piston-rod serving as a holder to carry the drills. To the cylinder a valve chest is fitted, in which there is a slide-valve moved by two pistons, one of them having a larger area than the other. The compressed air on entering the valve chest exerts pressure upon the two pistons alluded to, but the area of the one being greater than that of the other the movement produced is towards the right, by which the port is opened and the drill driven against the rock. The revolving movement of the drill is effected by the alternate pressure of the two single-acting pistons, which receive the motive fluid pressure through two openings made in the ports. The feed for the advance of the cylinder in proportion to the increasing depth of the excavation, as well as for the retrograde movement, is produced by means of a screw working in a nut forced to the cylinder. It is only necessary to ensure in the valve pistons sufficient resistance to cause them to work conformably with the main piston carrying the drill, which is easily accomplished, in consequence of the low pressure at which the apparatus works. The machine, it may be said, can be worked without the aid of skilled supervision, as the work can be easily learned by an ordinary miner in the course of a few days, which, indeed, we believe is the case as regards most drills. Several holes are drilled, including a large one in the centre, and when this is done the drilling is completed; the carriage is then withdrawn, and the blowing is proceeded with, which is done by volleys of four or five charges at a time. In connection with the drills it may be here stated that simultaneous firing by electricity will be found the best as well as the safest. At the pits alluded to, however, it appears that boring is carried on from five to six hours at a time, and the firing of the shots and removing of the broken material about twice that time. In one case the drifts were 7 ft. 2 in. in height, and nearly 8 ft. wide, and the contract price varied from rather less than 2½ to 5½ per yard for everything, including drilling, firing, filling, power, oil, fuse-removing, &c. On the other hand, for the same work by hand the price that would be required by the miners would be from 2½ 3s. to 6½ 8s., without removing the rubbish, the estimated cost for which is from 7s. to 8s. per yard. The air-compressing engine used in driving the drills was on the Sommeiller system, made by JOHN COCKERILL and Co., of Seraing, and had one steam cylinder, which drove two air-cylinders by means of spur-gearing. The favourable results obtained in France by the use of drills specially constructed for mining and other purposes, we should say, would also be found were those made by our own inventors more appreciated at home than they have been. English-made drills cannot be surpassed, if equalled, either as regards economy or rapidity of work, and it is for these reasons we have called attention to them, in the expectation that in so doing mine owners, quarry owners, and others will endeavour to see whether it would not be to their interest to more fully recognise inventions that have been specially worked out to meet their requirements.

## LIGHTING OF MINES BY ELECTRICITY.

Our views, so frequently expressed in the Journal as to the lighting of the roads and working places in which by electricity, appear likely to be realised at a much earlier period than we anticipated. The system is about to be tried on an extensive scale by one of our largest Scotch colliery owners, and the result, we need scarcely say, is looked forward to with a great deal of interest, especially by those connected with the coal trade. Its successful application will affect several trades, for no safety-lamps, wicks, oil, and several other materials will be required; but at the same time it is not to be supposed that the success of the electric light in our mines must necessarily lead to the entire prevention of mining explosions. Such could only be even partially effected with respect to mines where no blasting was allowed, but where powder was used there would always be the same danger of the flash coming in contact with the accumulated gas and exploding it. But lamps, there can be no question, have led to many serious disasters, either from being defective, open, or being surrounded with the fine particles of coal dust which, it has been found, is capable of igniting. Safety-lamps, too, are frequently opened by the miners for several purposes; but this source of danger would be done away with by the adoption of the electric light. And then there is the danger arising from the recklessness of many miners, who, undeterred by past calamities, will indulge in smoking in their working places, in spite of the heavy penalty which they have to pay if discovered. We point these things out to show that too much should not be expected of the electric light in the event of its being successful in doing away with lamps in our mines. If no other influences are used we shall, in all probability, hear of comparatively few explosions on the same scale we have had to record for many years past, whilst the advantages to the miners will be considerable.

In coal mines in particular a man will be able to see the straight line in which to work the point of least resistance, and in many instances will be able to bring down 50 per cent. more coal than he did when he had to depend upon the dim light of the safety lamp, whilst the filler will also be able to do his work with much greater rapidity and cleanliness, so that there will be a marked increase in the production of coal in a given time. Coal will thus be brought to the surface at a much lower rate than at present, whilst the position of the miner will be improved by the increased get. Such will be the benefits resulting from the successful application of the electric light in our coal mines. But in connection with it there are also dangers that will have to be avoided—that is too great confidence that it is a specific against every thing in the shape of danger that may arise from almost any known cause. It has been said that many miners provided with a safety-lamp consider that they are armed against every possible danger known in mining operations, so that it is quite likely they will come to the conclusion that the electric light having superseded the safety-lamp, they can with it dare almost anything. But electricity will not prevent explosive gas from accumulating in a mine, so that the lighting of a match or the spark from a tobacco pipe will still be as dangerous as ever; so that the strictest discipline should continue to be maintained in all our mines, so as to prevent breaches of the rules that could in any way lead to accident, if injury caused by negligence or recklessness can be so designated. Then there should be no neglect of the ventilation in

consequence of the introduction of a new element capable of giving increased security to the miners, but one that cannot be looked upon as a safeguard against all the incidents that occur in a mine and lead to accidents of a more or less serious character. Where blasting is carried on and gas given off there will be the same danger as formerly, so that the ventilation should be maintained to its highest point. Even in mines where little or no gas is given off the ventilation should be kept up so that the working places should be kept in a healthy condition.

Subterranean works can only be made really healthy by diluting the injurious gases in a sufficient mass of atmospheric air, the active and continuous current of which draws them into the open air. Besides carburetted hydrogen or fire-damp there are other gases in mines, which if not diluted with a strong stream of pure air from above cause many dangerous maladies, with which workmen are often attacked after passing a certain time in an atmosphere charged with them. In mines, too, there are escapes of gases, including carbolic acid, proto-carburetted hydrogen, either pure or mixed, miasmas, and in lesser quantities sulphuretted hydrogen, carbonic oxide, sulphuric acid, mercurial or arsenical vapours in the mines of those metals; and all of these require to be rendered even comparatively non-injurious by a constant supply of fresh air from the surface. In thus noticing the introduction and probable success of the electric light for mining purposes, we also wish to point out that too much must not be expected from it, and that it would be in the highest degree reprehensible and dangerous for the managers of mines to relax in the slightest degree the thorough ventilation of the working and other places, and seeing that the special and other rules are carried out with the greatest strictness. By such means only can safety be ensured to those engaged in mining operations, even with the electric light.

## THE CANADIAN PACIFIC RAILWAY.

The “latest intelligence” from Canada shows tolerably conclusively that the Canadians mean business with regard to the great railway which their Legislature has determined to carry through the vast North-West to British Columbia. British Columbia is to Canada what California is to the United States. It is a kind of off-farm, which only consented to cast in its lot with the Dominion of Canada on the express understanding that it should be united with Ontario, Quebec, and the other provinces of the Canadian Confederacy. Hitherto faith has not been exactly kept by Canada with British Columbia, and the only excuse which can be urged for this is the pressure and influence of uncontrollable circumstances. However, now that the Dominion of Canada has attained the mature age of 14 years the Canadian Parliament, under the vigorous tutelage of Sir JOHN A. MACDONALD, has passed a Bill for the construction of the great link so long desired by British Columbia; and what is after all perhaps more to the purpose, Sir JOHN A. has formed a powerful syndicate, which ensures the due provision of the sinews of war. An immense land grant and other advantages have been thrown in by Sir JOHN A. to induce the Syndicate to carry the matter through to the end, so that British Columbia would now really appear to have a fair chance of witnessing the fulfilment of the condition upon which she consented to make common cause with Canada. Probably the Canadian Government has thought more of opening out the great North-West than of conciliating British Columbia. No doubt it is much more pleasant to keep an agreement than it is to break it; still, the development of the North-West has been for many years the dream of Canadian statesmen, and certainly if the North-West is really capable of supporting a considerable population in happiness and comfort it is the duty of the Canadian Government to render it available for settlement.

We may state with regard to this great Canadian Pacific Railway undertaking that General ROSSER, who formerly held a prominent position on the staff of the Northern Pacific Railroad, and who appears just the man to deal with the wilderness, possessing as he does a large stock of energy and intelligence, has been appointed chief engineer of the new enterprise. We also learn that the Syndicate which has been formed for the execution of the Canadian Pacific line has ordered a large quantity of rolling stock, rails, and other materials, thus giving proof of its determination to carry through the undertaking within the period stipulated by the Canadian Government. Large as the orders given out by the Syndicate may be, they cannot represent anything like the whole amount of the *matériel* which this vast enterprise must absorb if it is really carried to its ultimate development. The whole length of the Canadian Pacific cannot be less than 2600 miles, and although it will be only a single line in the first instance, still even a single set of metals for so long a distance will represent very large deliveries of rails, while as years roll on sidings, turn-outs, and extensive duplications will very possibly have to be constructed. We can but think that our ironmasters should do their utmost to supply the lion's share of the rails and accessories required for the Canadian Pacific. If they stand out for extravagant terms it is very possible that the Canadians may succeed in obtaining some of the rails which the great line will absorb from the neighbouring markets of the United States. But if British ironmasters show anything like a reasonable amount of prudence and common sense they ought to have no very great difficulty in old and true maxim that trade follows the flag; and, everything being equal, we think it is not too much to assume that Canadian engineers and contractors would be disposed to give a preference to British rails. We are not quite sure that the Syndicate will not find itself a loser financially from the Canadian Pacific Railway for some years to come. We fear that the traffic passing over the line will be somewhat feeble and disappointing. Perhaps we may be wrong in this supposition, and the line may have the effect of practically opening out a vast new world. But whether the Canadian Pacific is a financial success or not it certainly ought to be a valuable present aid and support to the British iron trade.

## A COLLIERY LIGHTED BY ELECTRICITY.

In connection with his new colliery at Earnock, which is aesthetically as well as in respect of being fitted with the most advanced machinery, and laid out in accordance with the most recent science, is really a model, Mr. Watson, of Earnock, has all along intended, if at all practicable, to utilise the electric light in the lighting of it, not only on the surface but at the pit bottom, in the roads, and at the working faces. He recently selected Swan's electric lamp for this purpose, and yesterday the first step was taken incidental to its introduction to the colliery. Besides Mr. Watson there were present Mr. Grant, Kilmarnock; and Mr. Gilchrist, manager, Earnock. It is intended to erect the dynamo-electric machines in the engine-house connected with the Guibal fan at the colliery, and the gentlemen named were engaged indicating the horse-power of the fan engines to ascertain the surplus power for driving the machines. From the engine-house the electric cables will be led down the nearest pit-shaft into the workings. In the Swan lamps the glowing or incandescence is covered in vacuo, and it is claimed for them that even in presence of inflammable and explosive gas they are absolutely safe. Mr. Watson, whose enterprise is well known, has the distinction of being the first to apply the light of the future to the lighting of mines. It is his intention also to lay a cable with the light to Earnock Mansion House, now being added to on an extensive scale, and situated about  $\frac{1}{2}$  mile from the colliery. The preliminary operations attending the introduction of the light will occupy nearly a couple of months.

In connection with this event, Iron says:—Mr. John Watson, of Glasgow, and Earnock, near Hamilton, has just adopted the electric light as a means of illuminating his collieries at the latter place. After investigating the merits of the various systems of electric lighting, Mr. Watson decided upon giving that invented by Mr. Swan a trial. He, therefore, made arrangements with Messrs. D. and G. Graham, telegraph and telephone engineers of Glasgow, to light the above collieries with the Swan incandescent lamp both below and above ground. We may mention that Messrs. Graham have concluded an engagement with the Swan Electric Light Company to work

their system throughout the whole of Scotland. At the Earnock Colliery the Swan lamps will be fitted up at the pit bottom, along the principal roadways, at the station occupied by the underground hauling engines, and most probably at the miners' workings places proper. They will likewise be fitted up in the pithead framing, the engine-houses, offices, and the numerous workshops situated in the vicinity of the pithead. This excellently equipped colliery is provided with no fewer than five steam-engines at the pithead, two of which are used by turns for driving a 40-ft. Guibal fan, which is employed for the ventilation of the pit. It is intended that the power required for driving the dynamo-electric machines in which the electric current is generated shall be obtained from the ventilating engine, which is in action for the time being. We may mention that at the Philosophical Society of Glasgow last week Mr. Swan showed one of his lamps in action, which was so modified as to be suitable for that kind of underground exploration which can only be undertaken with the aid of a safety-lamp. It was passed to and fro in the lecture hall, and handed from person to person, by whom it was inspected. The electrical connection between the lamp itself and the source of power was maintained by a stretch of strong insulated cable, which was exceedingly flexible. Mr. Swan stated that arrangements were in progress which it was expected would soon result in the introduction of the safety modification of his lamp into one or two fiery collieries. Besides introducing the electric light into Earnock Collieries on a very complete scale, Mr. Watson has resolved at the same time to adopt the same illuminating medium at his country residence, Earnock House, which is about  $\frac{1}{2}$  mile from the collieries. There will be a line of conducting cable from the dynamo-electric machines at the pithead to the lamps at Earnock House. We believe that Mr. Watson will be the first person in Scotland to use the Swan incandescent electric lamp in domestic lighting as well as in the colliery.

#### STREET ILLUMINATION BY ELECTRICITY.

The Anglo-American Brush Electric Light Corporation has secured the honour of having made the first thorough test of the applicability of electric illumination as a substitute for gas lighting in the public streets. In the trials of the Jablockhoff light at Paris and in London electricity has only been used as an auxiliary to the gas; in the Avenue de l'Opéra where the test was most nearly complete—the gas and electric lamps not being used simultaneously—the gas replaced electricity about midnight, so that the expense and trouble of lighting, extinguishing, and cleaning, remained as before; and on Waterloo Bridge and the Thames Embankment, in London, not only have the electric lamps been extinguished before midnight, but the gas has always been burned to assist them. In the case of the Brush light now used on Blackfriars Bridge, in New Bridge-street, Ludgate Hill, north side of St. Paul's Churchyard, and Cheapside as far as King-street, they are used from sunset to sunrise, and are burned altogether independently of gas. The merits of the Brush system of electric lighting has already been fully referred to in the *Mining Journal*, and the opinion has been expressed that of the various systems yet introduced it is the only one which has any chance of coming permanently into use. The results thus far obtained fully justify this view—there is no record of a case in which the Brush light once adopted has been abandoned either to return to gas or other of the old modes of illumination, or to replace it by any other electric system; and this fact is the more striking when it is considered that there are at present more Brush lights in use than those of all the other systems combined.

The Americans are far more forward than Europeans with the introduction of electric illumination, for in America not only is this system of lighting largely used for public purposes, and in a vast number of rolling mills, iron and steel works, machine shops, stores, parks, docks, and the like, but is so simple and reliable, and can be put in operation with so small an amount of power, that it has been adopted by four travelling circuses—one using 13 lamps, another 9 lamps, the third 4 lamps, and the fourth 2 lamps. As it is obvious that in such cases the whole of the machinery—the engines, generators, conducting wires, and lamps—would have to be moved from place to place, it would be difficult to find a better evidence of the compactness of the apparatus required, and of its non-liability to derangement. But to return to this country, it may be said that judging from the line from Blackfriars Bridge to King-street, the Brush system, as a system, leaves nothing to desire but to render it preferable to gas, as previously used, there can be no doubt that the Brush lamps require to be placed closed together; not that the amount of light at the points of maximum darkness between the lamps is less than whilst gas was in use—indeed, it is probable that the candle-power at such points is considerably greater—but from the greater variation the effect is less satisfactory. It is well known that the utility of a given light does not depend entirely upon its power, but is largely affected by the manner in which the eye and the light fall upon the object to be illuminated. Hence it is that in a colliery by carrying our Davy lamp in the usual way so that the eye never gets the direct rays of light, we can see our way along a gallery as easily as in walking along an ordinarily illuminated London street, and it is for the same reason that the metalliferous miner with his 30 to the pound candle stuck in a lump of clay in his hat-cap can distinguish closely allied minerals with the utmost certainty and precision. The light from electric lamps as at present arranged does not sufficiently overlap, and this is observable even with the utmost care to keep the eyes turned to the ground, and to avoid direct rays. This says nothing against the Brush system, since all that is required is a little correction in detail, whilst its economy is so great, to say nothing of the progress which is being made in cheapening it, that even for street lighting it may fairly be pronounced a success.

The illuminating of the City has naturally caused renewed attention to the subject of electric lighting, and some interesting particulars have, therefore, been compiled by the Anglo-American Brush Electric Light Corporation for the information of the public. In 1832 Faraday announced that he had discovered what has since been called magnetic induction, or the induction of a current of electricity in a coil of wire brought near a permanent magnet, and the phenomena attendant thereupon. The announcement created great interest in the scientific world, and various instruments and machines were made by electricians and others to test and utilise the newly discovered natural laws. Among these early and very crude machines may be named those of Clarke, Nollet, Holmes, Wilde, Ladd, and others; but it was not until recently that material progress was made in perfecting apparatus that should fairly represent the value of Faraday's discovery. The Gramme and Siemens' are types of machines more successful than their predecessors; but when Mr. Brush introduced his system no apparatus existed that would furnish a current for a number of lamps, and permit of their being burned in one circuit, with steadiness and uniformity. Mr. Brush then presented to the public a machine which may be considered to be practically and economically the most successful occupant of the field. Already about 6500 Brush lights are in regular industrial use, and it has been demonstrated that with the Brush system 16 powerful electric lamps can be burned on one circuit with an absorption of only 14 horsepower—this is being actually done on the line from Blackfriars Bridge to King-street.

The enormous advantage of being able to burn a large number of lights on one circuit is obvious, as one wire does the work of several, and the economy when the lamps are at a distance from a generator becomes a very important consideration. There is a certain loss of electricity in every wire, however carefully it may be insulated, so that the fewer circuits for a given number of lamps the less is the loss. The Brush lamp near King-street, Cheapside, is about  $\frac{1}{2}$  mile from the generator, and the first Blackfriars Bridge lamp (the nearest to the works) is perhaps  $\frac{1}{4}$  mile. Assuming these distances to be correct, the loss of electricity would be on  $\frac{1}{4}$  mile of wire instead of upon 3 miles, which is worth consideration, apart from the saving in wire itself. To allow for extension and for contingencies four wires have been laid the whole distance (it is believed that many of the larger shops will adopt the light), but at present only two are used, and probably one would have sufficed, but it was thought undesirable in the first instance to trust all to one engine, so that in the improbable case of an accident to one engine every alternate lamp would continue to burn. It has already been explained that

with the Brush system an accident to a lamp does not affect the remainder, as short circuit is automatically made, and all goes on as before. As this change only occupies a small fraction of a second it is not discernible. Where a large amount of light is required the Brush is found by continued experience to be not only the safest and most pleasant but by far the cheapest obtainable from any known source. That there is no danger in its use at all corresponding to those incurred in the use of oil or gas is evidenced by the fact that the insurance companies in America prefer it to any other for use by their customers; it is beneficial to health for it does not vitiate the atmosphere, and give off such quantities of heat and noxious gases as do other illuminants, notably gas. The air in a room where electric light is exclusively used remains pure, cool, and healthful. And it is an economical light, not only as regards its actual employment and the proportion of illumination obtained from it, but also, which is more important, in enabling the proprietors of machinery to derive double advantage from their capital outlay—to keep their works going by night as well as by day—and thus to avoid the expense of double buildings and duplicate machinery for a given quantity of work. Hitherto there has certainly been nothing exhibited which for simplicity, cheapness, and reliability can at all compare with the Brush light, so that it cannot be doubted that the Corporation which has undertaken the development of the patents in this country has a long and successful career before it.

#### TAVISTOCK DISTRICT—SORTRIDGE.

Some five-and-twenty years ago there were few mines in higher favour in the market than Sorridge Consols, and investors displayed the greatest avidity to secure shares at almost any price demanded; but although the intrinsic value of the property was not doubted, the delay which occurred in getting the produce to market in sufficient quantities to render the mine independent of further support from the shareholders caused many to become disheartened, the result being that the supply of funds was stopped, and the mine ultimately suspended. The revival of mining which has been productive of so much advantage to the western counties naturally led to renewed attention being turned to the Tavistock district, and already several of the suspended mines have been reopened with brilliant prospects of success. Sorridge Consols is now to be added to the list of Tavistock revivals—the Sorridge Copper Mining Company, with a capital of 40,000*l.*, in shares of 1*l*. each, having been formed to resuscitate and develop the property, a most prominent feature in connection with the enterprise being that the company will have no royalty to pay until it has sold 60,000*l.* worth of ores, and that even afterwards the amount payable will be but one-twentieth. Of the capital now to be created, 21,000*l.* is to be issued as fully-paid shares in purchase of the mine, &c.; so that 19,000*l.* will remain as working capital, which will be ample. The instalments on the working capital shares are payable 2*s. 6d.* on application, 5*s.* on allotment, and the remainder as required; but there is the useful provision that they paid up on transfer, so that there will never be the inconvenience of two classes of shares upon the market.

The shaft, as will be seen from the prospectus in another column, was sunk to about 150 fathoms, with a view, it is said, of coming to the junction of two lodes; which, however, was never reached, as the sinking was not continued deep enough. It is also believed that below the deep adit they followed only a branch, or unproductive part of the lode, and that the other portion, which was so productive above, is still untouched in the lower workings. In addition to this very little was done in driving levels. The last company, it is explained, obtained their returns altogether from the east side of a cross-course, which crosses the lode, and they did nothing to the west of it; but the lode has now been found there, composed of an exceedingly fine gossan, containing rich copper ore, though only within a few feet of the surface, and there is every indication that large and valuable deposits will be found at a comparatively shallow depth, like those formerly met with under the gossan on the other side of the cross-course, and under similar circumstances, in the original great discovery at Devon Consols, &c. There are other promising lodes (of both copper and tin) in the sett, particularly a large tin lode, on which there are extensive old workings (the deepest point being only 20 fathoms), and from which the lessor has himself sold about 600*l.* worth during some very limited operations carried on by him in the last few years, but the last company worked only the main copper lode, and did nothing to the others.

The reports of the several mine agents who have inspected the property are particularly encouraging, showing that there are important facilities for cutting, in a short time, all the lodes at about 50 or 60 fms. from surface by driving cross-cuts to them from the deep adit; and with regard to the copper lode where just found west of the cross-course it will be seen by his reports that Capt. Daw says, though it is only a few feet below the surface it contains rich copper ore, and that a "finer looking lode cannot be seen," and he is of opinion that ore in paying quantities will soon be found at that point. Capt. Skewis reports that the situation of the mine is a good one, being in a beautiful piece of clay-slate formation overlying the granite, similar to that in which the best mines in the district have been found. The lode that has been worked upon was proved to be rich, so far as the late company followed it, and it appears that this lode can now be cut west of the cross-course about 20 fms. deep by means of an adit level being driven 20 to 25 fms. When done he believes a good discovery of copper will be made.

Also the Great North Tin lode can be cut by driving a cross-cut about 12 fms. from the end of the present deep adit. This lode has never been seen below the 20, where he is informed it is 30 ft. wide, and never worked upon by the late company. But the proprietors have since sold a large quantity of tin from it and that level and above. He is of the opinion that the cutting of this, together with the copper lode west of the cross-course, will make such discoveries as will result in opening up a large and profitable mine. In fact, he considers the work already done is all in favour of the present company.

**PHOENIX AND WEST PHOENIX UNITED.**—These important mines are reported to be much improving, and are now making good profits. A special report appears in another column. The general meeting of shareholders will be held this month.

**BELL VEAN.**—This mine is being opened out with all possible speed, and will be returning mineral shortly. At the 40 the lode has been much disturbed and variable in produce, but the forehead is getting into settled ground. The Gobbin shaft is being put in order, and other arrangements are being pushed forward to open out the western part of the sett, and to commence the deep shaft on the great copper lode.

**SORTRIDGE.**—Amongst those who have lately examined this property for a large shareholder is Capt. Hooper, of South Devon Consols, who expressed himself very much pleased, and said he believed the lodes would prove very productive.

**MINING IN NORTH CARDIGANSHIRE.**—This district has lately taken quite a start in mining, after a long period of depression. Beginning at Talybont. The old Alt-y-Crib Mine has been started under new auspices, and it is intended to give the mine a spirited trial in depth, and there can be no doubt that, looking at the immense riches extracted from this hill at shallow depths, that an equal, if not greater, deposit of ore exists below. To the west, again, on the same course of lodes, a new mine has been commenced, and some exceedingly rich stones of ore have already been cut within a few yards of surface. To the north of these properties is the Tan-yr-allt Mine, now making regular returns of ore. Further north, again, and to the east, a very rich course of lead ore has been discovered, and there are upwards of 100 tons already broken ready for dressing. At a place called Bryn Dwyf Mine, west of this, a fine lode, containing lead and copper, has been laid open at surface. At a place called Penrhyn Gerwen this looks one of the richest deposits seen at surface in Cardiganshire for some time, and well worthy of a trial in depth; it is well situated, being within a stone's throw of the turnpike-road, and close to a plentiful supply of water. These discoveries have led to quite a rush to take up mine sets in the neighbourhood, and there

are rumours of some three or four new concerns starting, as well as the old Taliesen Mine, which has produced great returns of silver-lead ore.

#### AIR-COMPRESSING MACHINERY.

The success of rock-drilling machinery being in a great measure dependent upon the efficiency of the air-compressing machinery interest naturally attaches to all improvements in air compressors. The object of the invention of Mr. PETER EVANS, of Liverpool, is the efficient filling of the cylinders of air-compressing machinery with full bodies of air at atmospheric and low temperatures, and the maintenance of such low temperatures during the process of compression; also the utilisation of the heat liberated in compressing air for increasing the effective force of such air after compression; also the production of compressed air in such a state that it can be worked expansively, with efficiency and economy.

According to Mr. Evans's invention he constructs an air-compressing cylinder so as to receive two pistons on the same piston-rod, the air being compressed between each piston and its respective end of the cylinder. The space between the pistons forms an air or water chamber, which serves to keep the cylinder cool. He admits the air into the cylinder ends through valves at the ends of the cylinder or in the cylinder covers, and also through ports or passageways in the centre of the cylinder, past which each piston travels. By this means he ensures each end of the cylinder being filled to its entire capacity with air at atmospheric or low temperature for compressing. The compressed air is delivered from the ends of the cylinder through suitable valves to a receiver or otherwise.

For the purpose of abstracting the heat concentrated and liberated by the compression of the air, he surrounds, or partly surrounds, the compressing cylinder with an annular space between the cylinder and the usual water jacket, and through this annular chamber he keeps a current of cold air constantly passing, induced either by the suction of the compressor itself or by other means, so that the heat liberated from the air under compression is absorbed by the current of cold air passing round the compressor. He abstracts or utilises as far as possible the heat taken up by the air current in its passage around the cylinder by passing such current through a receiver by surface piping, or by its circulation through air distributors or other suitable apparatus. By this means, he increases the efficiency of the air in the receiver or distributor, and produces it in such a state that it can be worked expansively.

**CRUSHING AND PULVERISING MACHINERY.**—Reference has already been made in the *Mining Journal* to the improved crushing and pulverising machinery for gold, silver, copper, and other ores, designed by Mr. C. E. Hall, and manufactured by the Saville-street Foundry and Engineering Company of Sheffield, and on Saturday last an opportunity was afforded at the works for inspecting a new ore crusher intended for mountainous districts where the transit is entirely by mules. It is constructed almost entirely of steel, and in parts no one of which weighs more than 300 lbs. Its method of construction is also novel, and it is in all respects calculated to meet the approval of practical miners in all districts.

**JOINT-STOCK COMPANIES.**—A Blue Book has been issued, giving the return of joint-stock companies registered in 1878 and 1879 and in 1879 and 1880. In the year ending May, 1879, there were 836 companies registered, with a proposed capital of 83,349,187*l.*; while in the year ending May, 1880, there were 1133 companies registered, with a proposed capital of 123,831,032*l.*, and 38 were registered without nominal capital. The Blue Book, in a note, says that in 1869 a company was registered with a nominal capital of 100,000,000*l.*, but it paid-up capital never exceeded 20*l.*

**TRUBNER'S AMERICAN, EUROPEAN, AND ORIENTAL LITERARY RECORD.**—The current number of this record contains an interesting obituary notice with portrait of Frederik Muller the great antiquarian and scientific bookseller of Amsterdam. There is as usual a large amount of literary intelligence and a list of new American books and recent importations. Prof. Marsh's *Odontornithes*, Hall's *Paleontology*, and Bishop (Shaker) Ead's *Scripto-Rational Sermons* on the Principles of Shakerism, are amongst the works just ready, and some very interesting volumes are announced as being nearly ready.

**OBTAINING ELECTRICITY.**—A series of coils or helices of conducting material, and in combination therewith an interior central bar or tube, the motion of which within the helices, and in the direction of their length, causes electric currents within them, is proposed by Mr. C. W. HARRISON, of Southampton Buildings. The motion of the interior bar may be either vibratory or continuous, and when the latter it is effected by an endless chain of such bars, which in continuous motion pass successively and rapidly through a series of coils or helices, or the coils or helices may have the motion imparted to them, and the bar remain stationary. The interior bar may be built up to form a multipolar magnetic core, having a series of poles, separated one from the other by space or by a non-magnetic substance, or the magnets forming the core may be combined so as to form one magnet with a series of magnetic and neutral points, for which purpose the magnets are put in contact end to end by like poles. Independent currents may be taken from each coil or from a group of any required number of them. Also coils and their cores may be placed in series side by side so as to increase the effect of the current. According to another part of the invention, applicable to known and other electric machines producing alternating currents, he passes such currents through one or more coils of conducting material, conveniently placed in connection with the machine, the reacting currents of which coils are made by a suitable commutator placed on the axis of the machine to act in direction with the initial current.

**PRESERVING INDIA-RUBBER TUBING.**—In consequence of the great loss sustained annually from the ordinary description of india-rubber tubing becoming brittle and even breaking, Mr. MARECK determined, more than a year ago, and after many unsuccessful experiments, to lay a portion of his stock under water, and renew it more frequently. Until now this has proved excellent; even the thickest and stiffest tubes remain soft and flexible, without losing perceptibly their elasticity. He saturates it for use with sharp substances with melted paraffin. It is true that it undergoes a visible change in water, but it does not deteriorate. Red and brownish tubes become darker, and more brownish on the outer surface, and on section they appear from the edge inwards to about half their thickness peculiarly greasy and bleached. But for all practical purposes it is only advantageously altered. But it must be remarked that india-rubber bands as thin as linen cloth, with which a pipe was bound, became so brittle that they could be crumpled between the fingers.

**FINISHING ROUND BARS OF IRON.**—In finishing or trueing up rods, tubes, or bars of iron, steel, &c., while cold, Mr. F. RIXSON, of Sheffield, proposes the application and use of a polishing material either in a solid form, such as a solid emery or stone block, or in a granulated form, such as a "lap," supplied with emery or other powder applied to the surface of the rod, bar, or tube while it is caused to revolve by the action of the reeling machinery. Mr. Rixson prefers to place the block supported in a suitable manner between the rolls, where it also acts as a support to the bar or tube to be operated upon by the rolls. The position of the bar being below the centre of the rolls it receives a downward pressure, and in conjunction with its own weight presses sufficiently on to the solid emery or other block so as to be ground and polished when caused to rotate by the action of the rolls, thus producing a perfectly true and uniform surface. If it is preferred to use a granulated or powdered polishing material it may be applied to the surface of one or more "laps" or blocks of any suitable material placed in the position of the before-mentioned emery blocks, or in any other desired position before or behind the rolls. This process is a secondary process to that of rolling or reeling, the bars or tubes in the intermediate time being allowed to get cold. It is to be understood that although this invention is chiefly applicable to bars or tubes which have been operated upon by the reeling machine, it may be also applied to ordinary rolled or drawn bars or tubes.

## THE MINING SHARE LIST.

## BRITISH DIVIDEND MINES.

Shares.	Paid.	Last wk.	Clos. pr.	Total divs.	Per sh.	Last pd.
339 Blue Hills, <i>t</i> , <i>c</i> , St. Agnes	4 6	6...	3 1/4	3 1/4 3 1/4	0 2 0...	0 2 0 Sept. 1880
170000 Caron, <i>t</i> , Cardigan*	2 0 0...	2...	1 2...	0 4 0...	0 2 0	Oct. 1878
10000 Carn Brea, <i>t</i> , Illogan*	56 7	6...	132...	131 133...	0 0 1...	0 Feb. 1874
10240 Devon Gt. Consols, <i>c</i> , <i>a</i> , Tavistock*	1 0 0...	0 0 0...	12 1/2...	11 1/2 12 1/2...	118 7 0 0...	0 6 Dec. 1880
4296 Dolcoath, <i>t</i> , Camborne	10 14	10...	56 1/2...	56 1/2 56 1/2...	120 11 3...	1 0 Mar. 1881
30000 East Craven Moor, <i>t</i> , Pateley Bdg.	1 0 0...	0 0 1...	12 1/2...	11 1/2 12 1/2...	118 7 0 0...	0 6 Dec. 1880
6409 East Pool, <i>t</i> , Illogan	0 9	9...	35 1/4...	35 1/4 36 1/4...	22 17 9...	1 0 Feb. 1881
12500 Frongoch, <i>t</i> , Cardigan (11000 sh. iss.)	2 0 0...	5...	4 4 1/4...	4 4 1/4 4 4 1/4...	3 4 0 0 0...	0 2 Jan. 1881
40000 Glasg. Car., <i>c</i> , [30000 sh. £1 pd.] 10000 15s. pd.]	1 1/2...	1 1/2...	0 0 13 13...	0 0 13 13...	0 6 0 0 0...	0 6 Aug. 1878
500 Gorseid and Merlin Con., <i>t</i> , Flint	2 10 10...	3 1/2...	2 1/2 3 1/2...	0 5 0 0 0...	0 5 0 0 0...	0 5 Aug. 1877
15000 Great Laxey, <i>t</i> , Isle of Man*	4 0 0...	18...	17 18...	25 14...	0 6 0 0 0...	0 6 Jan. 1881
6400 Green Hurlth, <i>t</i> , Durham*	0 6 0...	7 7 1/2...	7 7 1/2...	2 1 6 0 0...	0 4 0 0 0...	0 4 Oct. 1880
20000 Grogwinion, <i>t</i> , Cardigan	2 0 0...	3...	0 16 4 0...	0 1 6 0 0...	0 1 6 0 0...	0 1 July 1880
10240 Gunnislake (Clitters), <i>t</i> , <i>c</i>	2 2 0...	5...	4 4 1/4...	0 15 9 0 0...	0 1 0 0 0...	0 1 Mar. 1881
2800 Isle of Man, <i>t</i> , Isle of Man*	25 0 0...	—	—	83 5 0 0...	1 0 0 0 0...	0 0 Sept. 1880
2000 Leadhills, <i>t</i> , Lanarkshire	6 0 0...	2 1/2...	2 1/2 2 1/2...	0 15 0 0 0...	0 3 0 0 0...	0 3 Aug. 1880
400 Lishburn, <i>t</i> , Cardiganshire	18 15 0...	—	—	605 10 0 0...	1 0 0 0 0...	0 0 Dec. 1880
12000 Mellanor, <i>t</i> , Hayle*	2 0 0...	10...	5 5 1/2...	1 3 6 0 0...	2 0 0 0 0...	0 2 Jan. 1881
9000 Minera Mining Co., <i>t</i> , Wrexham*	5 0 0...	10...	9 1/2 10...	69 0 0 0...	1 0 0 0 0...	0 1 Feb. 1880
*3000 Mining Co. of Ireland, <i>c</i> , <i>c</i> , <i>t</i> *	7 0 0...	3...	2 1/2 3 1/2...	24 0 0 0...	2 0 0 0 0...	0 2 Jan. 1880
*8000 Moes, <i>s</i> , Anglesea	5 0 0...	12...	11 1/2 12...	0 10 0 0 0...	0 10 0 0 0...	0 1 July 1880
5328 North Busy, <i>t</i> , Blackwater	0 10 8...	1/2...	3 1/2 1/2...	0 3 4 0 0...	0 0 10 0 0...	0 0 Oct. 1880
11823 North Henev, <i>t</i> , Wales	2 10 0...	5...	4 4 1/4...	0 15 9 0 0...	0 1 0 0 0...	0 1 Mar. 1881
8146 Ditto	1 3 0...	—	—	83 5 0 0...	1 0 0 0 0...	0 0 Sept. 1880
2000 North Levant, <i>t</i> , St. Just*	13 6 0...	8...	7 1/2 8...	4 16 0 0 0...	3 0 0 0 0...	0 0 Feb. 1881
5000 Penhalls, <i>t</i> , St. Agnes*	3 17 6...	2...	1 1/2 2...	3 17 0 0 0...	0 1 0 0 0...	0 1 Jan. 1881
6000 Pennant, <i>t</i> , <i>c</i> , North Wales*	5 0 0...	5...	4 1/2 5...	0 10 0 0 0...	0 5 0 0 0...	0 5 Mar. 1880
12000 Phoenix United, <i>t</i> , Link	5 10 3...	3...	3 1/2 3 1/2...	0 2 6 0 0...	2 0 0 0 0...	0 2 Mar. 1880
18000 Pr. Patrick, <i>t</i> , <i>c</i> , (als. 120000 sh. 10 p.c.)	1 0 0...	—	—	0 13 6 0 0...	2 0 0 0 0...	0 0 July 1880
10000 Red Rock, <i>t</i> , Cardigan	2 0 0...	2...	1 1/2 2...	0 4 0 0 0...	2 0 0 0 0...	0 0 Jan. 1881
12000 Roman Gravels, <i>t</i> , Salop*	7 10 0...	12 1/2...	13 14...	8 6 0 0 0...	5 0 0 0 0...	0 0 Dec. 1880
4000 Rhudalun, <i>t</i> , Wales	10 0 0...	—	—	0 5 0 0 0...	0 5 0 0 0...	0 5 Feb. 1880
512 South Cardigan, <i>c</i> , Cleer*	1 5 0...	65...	60 65...	749 0 0 0...	1 0 0 0 0...	0 0 July 1880
1123 South Condurrow, <i>t</i> , Camborne*	6 5 6 0...	10...	9 1/2 9 1/2...	8 2 0 0 0...	0 10 0 0 0...	0 1 Jan. 1881
9000 South Darren, <i>t</i> , Cardigan*	1 16 0...	2...	1 1/2 2...	0 4 0 0 0...	0 2 0 0 0...	0 2 Apr. 1880
4500 South Wheat Frances, <i>t</i> , Illogan*	7 12 4...	10 1/2...	10 10 1/2...	40 15 6 0 0...	6 0 0 0 0...	0 0 July 1880
110000 Tarkerville Gt. Consols, <i>t</i> , Salop*	1 0 0...	—	—	0 16 3 0 0...	0 0 10 0 0...	0 0 Jan. 1880
6000 Tincor, <i>t</i> , <i>c</i> , Pool, Illogan*	11 10 0...	19...	18 19 1/2...	50 8 6 0 0...	5 0 0 0 0...	0 0 May 1880
15000 Van, <i>t</i> , Llanidloes*	4 5 0...	11...	10 11...	25 3 0 0 0...	0 5 0 0 0...	0 0 Dec. 1880
3000 West Chiverton, <i>t</i> , Perranzabuloe*	20 12 6...	—	—	55 10 0 0 0...	0 10 0 0 0...	0 0 Feb. 1880
512 West Tolgus, <i>t</i> , Redruth	95 10 0...	35...	30 35...	33 0 0 0 0...	1 0 0 0 0...	0 0 Jan. 1879
1200 West Wheal Seton, <i>t</i> , Camborne*	26 10 0...	23...	21 23...	223 0 0 0 0...	7 0 0 0 0...	0 0 Apr. 1878
6000 West Basset, <i>t</i> , Illogan	7 0 0...	45 15...	27 2 0...	0 5 0 0 0...	0 5 0 0 0...	0 0 Jan. 1881
12000 Wheal Crebore, <i>t</i> , Tavistock	2 4 0...	4...	4 4 1/2...	0 10 3 0 0...	2 0 0 0 0...	0 0 Mar. 1880
10243 Wheal Eliza Consols, <i>t</i> , St. Austell	18 0 0...	—	—	42 10 0 0 0...	8 0 0 0 0...	0 0 Aug. 1880
6000 Wheal Grenville, <i>t</i> , Camborne	15 0 0...	9...	8 1/2 9...	0 7 6 0 0 0...	2 0 0 0 0...	0 0 Jan. 1881
4235 Wheal Kitty, <i>t</i> , St. Agnes	5 4 6...	24 2 1/2...	12 18 6...	0 1 0 0 0...	6 0 0 0 0...	0 0 Jan. 1881
3000 Wheal Pever, <i>t</i> , Redruth	7 11 0...	18...	18 19...	7 8 6 0 0 0...	1 0 0 0 0...	0 0 Dec. 1880

## FOREIGN DIVIDEND MINES.

Shares.	Paid.	Last wk.	Clos. pr.	Total divs.	Per sh.	Last pd.
35500 Alamillos, <i>t</i> , Spain*	2 0 0...	1 1/2...	3 1/4 1/4...	2 2 9 0 0 0...	0 9 0 0 0...	9 Mar. 1881
130000 Almada and Trito Cons., <i>s</i> *	1 0 0...	—	—	0 6 3 0 0 0...	0 1 0 0 0...	0 May 1880
20000 Australian, <i>c</i> , South Australiat	7 7 6...	1...	1 1/2 1/2...	1 5 6 0 0 0...	0 2 0 0 0...	0 Aug. 1880
15000 Birdseye Creek, <i>c</i> , California*	4 0 0...	2...	1 1/2 2...	0 16 5 0 0 0...	0 2 0 0 0...	0 Dec. 1880
20000 Cape Copper Mining, <i>t</i> , South Africa	7 0 0...	43...	41 43...	41 7 6 1 0 0 0...	0 1 0 0 0...	0 Mar. 1881
35000 Cesena Sulph., <i>c</i> , Romagna Italy*	10 0 0...	—	—	1 1 0 0 0 0 0...	0 1 0 0 0...	0 Aug. 1879
50000 Copiapo, <i>c</i> , Chile (4 shares)	3 8 0...	3...	2 1/2 2 1/2...	1 12 9 0 0 0 0...	0 1 0 0 0...	0 July 1877
125000 Elberhardt and Aurora, <i>s</i> , Nevada*	10 0 0...	3 1/2...	3 3 1/2...	1 8 0 0 0 0 0...	0 3 0 0 0...	0 Dec. 1877
70000 English & Australian, <i>c</i> , S. Aust.	2 10 0...	1...	1 1/2 1/2...	2 18 9 0 0 0 0...	0 1 0 0 0...	0 Mar. 1880
25000 Fortuna, <i>t</i> , Spain*	2 0 0...	5...	4 1/2 5...	0 10 3 0 0 0 0...	0 2 0 0 0...	0 Mar. 1881
60000 Frontino, <i>c</i> , Brazil, New Gran.*	2 0 0...	5...	4 1/2 4 1/2...	42 10 0 0 0 0 0...	0 8 0 0 0...	0 Aug. 1880
120000 G. Phillips, <i>c</i> , Clunes* (12 shares)	1 0 0...	—	—	14 2 0 0 0 0 0 0...	0 10 0 0 0...	0 May 1880
15000 Linares, <i>t</i> , Spain*	3 0 0...	6...	5 1/2 6 1/2...	18 14 10 0 0 0 0...	0 4 0 0 0...	0 Mar. 1880
60000 New Quiebra, <i>c</i> , Venezuela	5 0 0...	8...	5 1/2 6 1/2...	0 2 6 0 0 0 0 0...	0 6 0 0 0...	0 June 1879
100000 Rio Tinto, <i>c</i> , Sp. Cons. Bds., Huelva	100 0...	101...	99 101...	0 0 0 0 0 0 0 0...	5 per cent.	—
225000 Ditto, shares	100 0...	23 1/2...	23 24...	0 18 0 0 0 0 0 0...	8 per cent.	—
40000 Santa Barbara, <i>g</i> , Brazil	10 0 0...	2...	6 1/2 6 1/2...	0 2 6 0 0 0 0 0 0...	6 per cent.	—
120000 Scottish-Australian Mining Co., <i>t</i> *	1 0 0...	2 1/2...	2 1/2 2 1/2...	0 10 9 0 0 0 0 0 0...	2 1/2 per cent.	—
80000 Ditto, New	2 0 0...	1...	1 1/2 1/2...	0 1 0 0 0 0 0 0 0 0...	1 1/2 per cent.	—
50000 Sentein, <i>s</i> , <i>b</i> , Ariège, France	1 0 0...	12...	11 1/2 12 1/2...	0 2 0 0 0 0 0 0 0 0...	12 1/2 per cent.	—
225000 Sierra Buttes, <i>g</i> , California*	15 0 0...	—	—	2 1 6 0 0 0 0 0 0 0...	0 1 0 0 0 0 0 0 0 0...	0 Oct. 1880
200000 Port Phillip, <i>c</i> , Clunes* (12 shares)	1 0					

## THE NUNDYDROOG GOLD MINING COMPANY (LIMITED).

This company report the receipt of the following advices from their manager, Mr. J. D. Plummer, March 7: It is not quite three weeks since I commenced work here, but we are getting on very well, and we are doing a lot of useful work. When I first arrived I understood from reports in circulation that I should find some difficulty in getting coaly labourers, but I am pleased to inform you that I have not found the slightest difficulty, and I had to eject some men and women this morning whom I could not employ. In fixing the rate of coaly pay I consented with the other agents, that boys, women, and weekly men get 2 annas, 3 annas, and 3½ annas per day, and good strong men get 4 annas per day. The present value of a rupee is 1s. 8d., 4 annas is equal to 5d. English. The work I have been engaged consists of cutting formations of smiths' shop, powder magazines, and dwelling-houses for the men and myself. This is completed, and we have got in nearly sufficient stones for formations. The bricklayers commenced this morning, I have let a contract for all brickwork. The contractor provides all brick, mud, water, and all labour; 1000 such bricks as we use will build 7 square yards of 15 in. wall, at a cost of 1 rupee 13 annas per square yard.—Mining Operations: We are trenching and searching up the mines; it will require a good deal of this work. The mines appear to be a complete network, and I wish to carefully study the whole system. In one instance, however, I think I have succeeded in making matters pretty clear; 30 fms. north of our south boundary I have made an extensive cutting in search of the main lode. This is a continuation of the Oregum Reef: it is opened 104 ft. long, 5 ft. wide, and 7 ft. deep. The first 50 ft. or 60 ft. showed nothing but clear killas, while the next 40 or 50 ft. in length presented a totally different appearance. We began to find bits of quartz, carbonate of lime, decomposed slates of a yellowish green tint, and as we advanced with this cutting we struck a point of the lode near the old workings. I have panned some of this stuff, and very small bits of gold were found. I look upon this with great satisfaction, and I think I may be perfectly assured that I am on the proper track. The other explorations are some hundreds of feet to the north, and here there are three companies in search for the main lode. Though we have cut strings, branches, or small veins I am not satisfied, and we shall continue to search. We have made the following works:—One opening 84 ft. long, 4 ft. 6 in. deep, and 4 ft. wide. It is clear killas rock in the bottom except at one place, where a small branch of spar is seen.

The next opening is 77 ft. long, 5 ft. deep, 4 ft. wide. We have found a small vein 15 in. wide in this cutting. The next work is 58 ft. long, 3 ft. deep, 4 ft. wide. It has exposed a strong quartz reef 3 ft. wide. I am still going on with the trenching, and will make myself master of the whole system of these mines. I have great confidence in our property, and I like the situation. The appearance, as well as the history, of this mining field, is favourable. I am confident Nundydroog is as good a property as any of the others. I will develop its resources as quickly as I can, and I hope to be able to send you such complete and satisfactory statement at an early date as will fully establish the character of Nundydroog Gold Mines. I told you in my last letter that I had succeeded in making matters pretty clear regarding the discovery of the main reef. The old works then referred to we have continued to clean up, and at a depth of 18 ft. from surface we came upon a solid crust. On breaking through this, in the south end large excavations were found. We also broke through the north end, and found a continuation of the excavations. The people in this neighbourhood say these works were made by the "Maragan," the last king of Mysore, but no one appears to be able to give any particulars. I am, however, very much pleased; it proves that I have taken the proper course to open up these reefs.

Besides the main reef, I have found two other quartz reefs, showing strength and favourable indications. Since we have discovered the Maharajah's workings I have determined to open it to the bottom with as little delay as possible. At present I cannot break through the crust for fear the sides will collapse. We are now engaged cutting down the shaft 12 ft. by 6 ft. After this is done the necessary timber will be put in, then we shall sink through the old works. The main reef at this point is 45 ft. wide. I am making our shaft on the hanging side in the old works, and by sinking perpendicularly it will pass through the lode and strike the footwall at a depth of 135 ft. The underlie is about 2 ft. per fathom. If we should require to go deeper—say, 180 ft., 45 ft. will be sunk on the footwall, and at that depth it will require a cross-cut 2 fms. 3 ft. to intersect the lode. This course presents itself to me so favourable and easy that I have determined to put it in operation at once. Except for timber it will be cheap sinking, and we shall go down very rapidly when once we get the shaft in proper trim. Everything is going on to my entire satisfaction, and so far I have found the native labour good for the amount of wages.

LAST CHANCE CONSOLIDATED (Silver).—The directors have received a letter from their agent at Salt Lake, dated March 19, the following being an extract from same: I arrived here on Wednesday evening, the 16th inst., and found semi-weekly reports from the mine captain together with samples of ore. His entire reports are embodied in the cable to you, and show that the mine is improving with every stroke of the pick. Up to yesterday there have extended the tunnel (which we will designate as tunnel No. 2, as there is another one above it which we will in future designate as tunnel No. 1) 68 ft. from the old working directly in the vein. The first 33 ft. was run in barren ledge matter, with some little ore mixed in it. After passing this point the workings showed a continuous ledge of ore, and at present the entire face of the drift is in ore. Mr. Samson, the mining captain, says we have ore on all sides of us, above and below, the ore is of a fair average grade, and will all pay to skip. In the last few days they have found some very rich ore. I enclose you assay certificates. The one made by Mr. Russell was only to test some of the ore which they found first, and in connection therewith Mr. Samson writes: "The samples represented by the within certificate of assay were only tested to see if they contained anything, and are much below the average ore." The assays made by Mr. McVicker are from samples which they had lately found, and show that the ore is improving. I have instructed the mine captain to at once start work on the upper tunnel, or tunnel No. 1, and push the same with all speed. This tunnel will open up considerable ground, and will develop the mine to the best advantage. As soon as the weather will permit I will have map and underground working plans of the entire property made, and will send you tracings of the same. This will enable you to follow the developments, as I will hereafter report them to you weekly.

—April 18: Telegram from agent at Salt Lake:—"Tunnel, 18; incline, 13; condition same."

EUREKA (NEVADA).—Telegrams from the company's agent in Eureka give the output of the Williamsburg Mine from June, 1880, to January, 1881, as 790 tons; February output, 85 tons; and March, 57 tons. Only four men at work prior to taking over mines.

PIERREFITTE MINING COMPANY.—A sale of silver-lead ore by this company has been made to the Royal Asturian Company at 102. 5s. 7d. per 1000 kilos, delivered at Pierrefitte.

LA PLATA MINING AND SMELTING (Leadville).—Week's smelting statement to March 19:—Ore purchased, 908 tons; ore smelted, 795 tons; lead produced, 120 tons; silver produced, 22,630 ozs.; silver-lead bars consigned to refiners, 127 tons; value of consignments, \$33,572; equal to 6994.

EXPLOSIONS OF COAL GAS ON BOARD SHIP.—A pamphlet has been issued by the Board of Trade, calling the attention of shipowners, shipmasters, colliery owners, coal brokers, underwriters, and others to the conclusions arrived at by the Royal Commissioners with regard to the prevention of explosions of coal gas in ships, especially to their fifth recommendation, which is as follows:—"5. That with a view to guard against explosion free and continuous egress to the air, independently of the hatchways, should be provided for the explosive gases by means of a system of surface ventilation, which would be effective in all circumstances of weather." Certified masters and officers are especially warned that neglect on their part will, in the event of accident, be brought to the notice of the Wreck Commissioner or of the Court investigating the case. The Board of Trade also give notice that, as vessels laden with coal, insufficiently or improperly ventilated, are dangerous to human life, it is their intention to prosecute those persons who in future send or take, or attempt to send or take, or are parties to sending or taking or attempting to send or take, to sea British coal-laden ships which, on account of such insufficient or improper ventilation, are in such unseaworthy state that the life of any person is likely to be thereby endangered. The pamphlet contains condensed reports of enquirers which have been held in cases of explosion of coal gas in ships during the last four years.

THREATENED FAILURE OF CHESHIRE BRINE SPRINGS.—A correspondent writes that considerable anxiety prevails amongst salt manufacturers in Winsford and district with regard to the failure of the brine springs. During the past two or three weeks the supply has greatly diminished, and already there are signs of a serious curtailment in the production of salt. Should there be any further development of these unfavourable symptoms it is feared that a great portion of the salt works in Cheshire will be stopped altogether during the summer months.

A FEAT IN NICKEL PLATING.—The Plating Company of the Bishopton Lane Works, Stockton-on-Tees, have successfully plated with nickel three large cylinder covers for marine engines on account of Messrs. Maudslay, Son, and Field, the eminent engineers. The largest cover weighs nearly 1½ tons, and is 6 ft. 6 in. in diameter. It was plated in the large nickel bath and polished all over with perfect ease by one of Fenwick's patent portable polishing machines, which, for getting up castings of large dimensions and irregular shape by emery wheels, has become a necessity in every shop. These machines are attracting much attention. The same company has also just nickel-plated the whole of the bright parts of Sir James Ramsden's yacht engines, built by the well known firm the Barrow Shipbuilding Company (Limited).

INSTITUTION OF MECHANICAL ENGINEERS.—The visit of the Institute of Mechanical Engineers to Newcastle-on-Tyne has been fixed for Aug. 2, 3, 4, and 5. The municipal authorities and the inhabitants of Newcastle-on-Tyne are likewise about to make arrangements for the celebration of the centenary of George Stephenson, on June 2, next, the 100th birthday of the great engineer. The cottage at Wylam, where he was born, is still in an excellent state of preservation.

WANTED, for a LEAD MINE in NORTH CARDIGANSHIRE, GOOD SECONDHAND WATER-WHEEL, 30 to 40 feet diameter; also a CRUSHING MILL. Particulars to be sent to D. C. DAVIES and Son, Mining Engineers, Oswestry.

## ANTIMONY MINING SETTS, NORTH CORNWALL.

ONE OR TWO MOST VALUABLE SETTS FOR SALE. Samples of the ore can be seen. Most liberal dues. To treat for same, apply to W. PAYNTER, Jun., Wadebridge.

FOR SALE OR HIRE, ONE HUNDRED to TWO HUNDRED or MORE 3½ and 4-yard END TIP WAGONS; also several 8-in. cylinder TANK LOCOMOTIVES, and other Contractor's Plant, equal to new. Apply, JOHN DICKSON, Jun., or A. C. BETTS, New North Works, Bootle, near Liverpool.

JOSEPH TOMS, STOCK AND SHARE DEALER, No. 88, BISHOPSGATE STREET WITHIN, E.C., Strongly recommends the purchase of shares in—

Carnarvon Copper. Wheal Boys. East Lovell. Parry's Corporation. West Holway. Wheal Grenville.

And is in an advantageous position to supply shares at close net prices. Buyers or sellers should communicate. A selected list of investments post free on application.

GREAT HOLWAY and NEW TRUMPET CONSOLS shares should be purchased for an important rise in price.

## STOCKS AND SHARES.

FOREIGN BONDS, RAILWAYS, TRAMWAYS, GAS, INSURANCE, IRON, COAL, and MISCELLANEOUS SHARES.

Prices, with reliable information, forwarded on application to—

MESSRS. H. R. LEWIS AND CO. BARTHOLOMEW HOUSE, BARTHOLOMEW LANE, LONDON, E.C.

SPECIAL INFORMATION in the SELECTION of MINING SECURITIES. The "MONTHLY INVESTMENT LIST" and the "WEEKLY PRICE LIST" may be had on application.

M R. C H A R L E S S J. S I M S , MINING AGENT, STOCK AND SHARE DEALER, 2, DRAPE R'S GARDENS, LONDON, E.C.

CHECKWEIGHMEN AND COLLERY OWNERS.—At Bolton, on Thursday, May 10, Mr. W. R. Scowcroft, proprietor of the Rose Hill Colliery, Burnley, was summoned for refusing to afford Job Pickop, checkweighman at the colliery, proper facilities for taking correct accounts of the weight of coal sent up the pit shaft. Mr. Cottingham, barrister, who prosecuted, said the summons had been issued under the 13th section of the Mines Regulation Act, 1872, and had been authorised by the Home Secretary. Defendant had contravened the Act by summarily discharging Pickop without the authority of the colliers. The only way in which a mineowner could discharge a checkweighman was by bringing him before a magistrate and proving that he had interfered in some way with the working of the mine. Mr. Cottingham then called Pickop, who said he was appointed checkweighman at the Rose Hill Colliery in November, 1874. On Feb. 9 the men struck work for an advance of wages, and witness also ceased work on the same day. The men went in again on March 2, and when witness was about to resume the manager told him he would have to see Mr. Scowcroft first. He saw the defendant, who told him that the men had been rather awkward lately and now he intended to be awkward himself; he (Pickop) must not be checkweighman there any longer.—In cross-examination witness said an advance was offered to the men between the 9th and 12th February, but he denied that he prevented them working before March 2. On the contrary, he advised them to start. The defence was that the contract between the men and Pickop and the defendant was terminated by the strike on the 9th February. In support of this Mr. Noah Jones, the manager, was called, and he stated that the men were all paid off on Feb. 12, and before they were allowed to resume work on March 2 they had to ask permission; in fact, every man was re-engaged.—Cross-examined: Witness said he was told by Mr. Scowcroft that his reason for not allowing Pickop to work was because he had been the means of keeping the men out longer than would otherwise have been the case. The Bench were of opinion that the contract between Mr. Scowcroft and his men and Pickop ceased on Feb. 9, and they dismissed the case. Costs were refused, but a case for a superior court was granted.

THE STONGEST OF THE BRONZES.—Under this title a paper was lately contributed to the American Society of Civil Engineers, by Prof. R. H. Thurston on a newly discovered bronze alloy of maximum strength. The properties of this alloy were ascertained by Prof. Thurston in the course of his examination in the mechanical laboratory of the Stevens Institute of Technology. The results of his experiments pointed to an alloy of the proportions of copper 55, zinc 43, and tin 2, as likely to be that possessing maximum strength, and on Prof. Thurston making the alloy he found it to possess a good colour, to be close-grained and susceptible of high polish. It was also found to have immense strength, considerable hardness, and moderate ductility, while it should also be forged if carefully heated. For purposes demanding toughness as well as strength Prof. Thurston found, however, an alloy with less tin to be preferable, and he gives the proportions of copper 55, tin 0.5, and zinc 44.5 as affording the best results. This alloy he states has a tensile strength of 68,900 lbs. per square inch of original area, and 92,136 lbs. per square inch of fractured area, while it elongated from 47 to 51 per cent. (length of test sample not stated) and reduced to 0.69 to 0.71 of its original diameter before fracture. He also states that the shavings produced by the action of the turning tool on this alloy curled closely, and were tough and strong like those of good iron. Prof. Thurston also refers to an alloy discovered several years ago by Mr. J. A. Tobin, but which appears not to be generally known. This alloy, which consists of copper 58.22, tin 2.3, and zinc, 39.48, had when cast a tensile strength of 66,500 lbs. per square inch of original section, while when rolled hot its tenacity rose to 79,000 lbs. per square inch, and when moderately and carefully rolled cold to 104,000 lbs. per square inch. It could also be bent double either hot or cold, and was found to make excellent bolts and nuts, while it could be forged at a low red heat. —Engineering.

TRUTH'S "CIRCULARISING TOUTS."—Messrs. C. T. Reeve's and Co., of Walbrook, desire to state that they do not object to the title, "provided the information which they give is correct, in which case it would not be less correct, because it is sent out by circular. The Ruby and Dunderberg Company, the shares of which they advised their clients to sell, have, they say, had an enormous rise in the market, without any foundation for it. The shares in the old company, of which the new one is only the successor, were not long ago sold for a few shillings, and they now sell for 8d. to 9d.; it is no secret whatever to anybody who will take the trouble to enquire about it, that this rise has been brought about principally by market operation, and has nothing to do with the real merits of the mine, considering that last year's balance-sheet shows a loss of 11,366. 19. 8d., and that the mine since then has in no way shown any further development. They think that those who follow their advice by getting rid of their shares at this inflated price will thank them for the advice they have given. —They fairly object, on the other hand, to the companies they recommend being described as utterly rotten, or nearly so, the companies being the Indian Glenrock, South-East Wymond, Wymond Perseverance, South Indian, Oregum, Nundydroog, Colar, and Dieu-Donne, and anyone may easily ascertain that they are all managed by respectable boards and competent managers, and that the prospects of each of them are decidedly more hopeful, considering especially the present unflinched value of their shares.

THE SKERNE IRON COMPANY.—The forthcoming meeting of the shareholders of this company, says our correspondent, threatens to be of a very stormy character. "A Shareholders," signing himself as such, as just issued a circular to the other shareholders, in which several of the vexed questions mooted when the company was reconstructed early last year are revived; and a series of somewhat searching resolutions, as given below, are down for proposal. That no dividend be paid on Foss 500's share, if unurchased, or any other unurchased ones. That the 10,000/- profit of Maclean's transaction be given to the company, to whom it rightly belongs. That it is the opinion of this meeting that the application of a committee of shareholders to the Master of the Rolls, in May, 1879, being supported in the main by promoters and unurchased shares, was not a lawful one; and that the Master of the Rolls be informed of its real character. That the vendors, Pease and Co., having indirectly assisted the promoters to the success of the original prospectus of the company, be requested a second time to contribute to 5000/- proposed by Mr. Morris at the time of the reconstruction of the company. That the debenture holders have no share of the profits of the company after 6 per cent. has been paid to them.

Issue at 5s. premium of well-secured Preference Shares carrying Seven and a-half per cent. interest, and participating in surplus profits.

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H. A. EDGAR, Esq., Bucklersbury, London, E.C.

FRANCIS H. FOWLER, Esq., F.I.B.A., Member of the Metropolitan Board of Works.

The Hon. FULKE GREVILLE, D.L., The Glen, Sunninghill.

FREDERICK THOMPSON, Esq., Director of the Malta Railway Company, Urmston Lodge, Wimbledon.

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The Seven and a Half per Cent. Preference may in fact be looked upon as absolutely safe, while the revival in trade will probably ensure a considerable addition to such 7½ per cent. from the participation in surplus profits.

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The extensive brickworks—combining all the latest improvements, and so designed that the manufacture is carried on continuously throughout the year—are believed to be the most complete and perfect in existence. There have already been upwards of 14,000,000 bricks turned out from them, and with an inexpensive addition to a portion of the works, the present make of about 170,000 a week can be brought up to fully 12,000

## COAL MINES REGULATION ACT, 1872.

EXAMINATION FOR MANAGERS' CERTIFICATES OF COMPETENCY.  
DISTRICT UNDER THE CHARGE OF HENRY HALL, Esq.,  
H.M. INSPECTOR OF MINES.

PERSONS desirous of being EXAMINED in this District for MANAGERS' CERTIFICATES OF COMPETENCY, under the above-named Act, should at once COMMUNICATE with the Secretary to the Board of the above-mentioned District, at the following address:—81a, King-street, Wigan, Lancashire.

By order of the Board,  
MASKELL WM. PEACE, Secretary.

N.B.—Persons who do not reside within the district are equally eligible for examination with those who do.

## SELF-ACTING JIGGING MACHINE.

THE HUNTINGTON COPPER AND SULPHUR COMPANY (LIMITED).

REQUEST TENDERS (with Specifications and Plans) for MACHINERY capable of DRESSING FIVE TONS PER HOUR of the COPPER ORE of their SUTTON MINE, CANADA.

The ore is of an argillaceous nature, containing about 4 per cent. copper, and 85 per cent. alumina and silicic acid, the grade to be raised to 20 per cent. water power, and crusher already provided.

The Directors do not bind themselves to accept the lowest or any Tender.

Further information to be obtained on application to—

THE SECRETARY, 149, Hope Street, Glasgow.

Tenders to be sent not later than 30th April current.

THE

ELECTRIC LIGHT AND POWER GENERATOR COMPANY (LIMITED).

Notice is hereby given, that the LIST OF APPLICATIONS FOR SHARES will CLOSE THIS DAY (Saturday), the 9th instant, for LONDON, and on MONDAY, the 11th, for THE COUNTRY.

5, Austin Friars, E.C.

F. H. LANDON, Secretary.

## THE "JAMIN" PATENT ELECTRIC LIGHT COMPAGNIE GENERALE D'ECLAIRAGE ELECTRIQUE.

Capital, 8,000,000 Francs.

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EAST WHEAL ROSE DISTRICT.—PARTIES WISHING TO OBTAIN INFORMATION or to ACQUIRE MINING PROPERTIES in this district will do well to put themselves in communication with J. GROSE, Newlyn East, Grampound Road Cornwall.

SOCIETE ANONYME DE LA NOUVELLE MONTAGNE, BELGIQUE.

The ANNUAL GENERAL MEETING of the Shareholders will be HELD on the 23rd April next, at One o'clock, at the Hotel d'Angleterre, at Liège.

MINE "EL CALLAO," GUAYANA, VENEZUELA.

COUPONS ON SHARES..... 322

Gold in bars produced in the month of February, 1881, and remitted to Messrs. Baring Brothers and Co., London, 573974 ozs.

DIVIDEND distributed for each coupon, \$100.

(Signed) A. LICCIIONI, President.

(Signed) VICTOR T. GRILLET, Treasurer.

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TO BE SOLD, pursuant to a Judgment of the High Court of Justice, Chancery Division, made in an Action of *Re THOMAS WILLIAM RIVIS (deceased) RIVIS v. PRESTON*, 1879, R. 65, with the approbation of the Honorable Mr. Justice FRY, the Judge to whose Court the said Action is attached, in One Lot, at first, and if not so sold, in Two Lots, by Mr. JOHN ELSE, the person appointed by the said Judge, at the Queen's Head Hotel, Matlock Bridge in the county of Derby, on Friday, the 29th day of April, 1881, at Six o'clock in the afternoon precisely, ALL THOSE 21-24th, 1-48th, and 1-192nd PARTS or SHARES (practically the whole of) and in all that MINE or MINERAL POSSESSION, called

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Including the MOOT HALL and DIMPLE TITLES consolidated therewith, and of and in all that other MINE or MINERAL POSSESSION, called "CAWDOR" and "OXCLOSE."

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Full particulars will shortly be published. In the meantime any further information may be obtained from Messrs. KELLY and KEENE, Solicitors, Mold; GEORGE BELLIS, Esq., Surveyor, Mold; or from the Auctioneers, Chester.

## CALSTOCK PARISH, CORNWALL.

MESSRS. R. MCTEAR AND CO. WILL SELL, BY PUBLIC AUCTION, No. 73, Renfield-street, Glasgow, on Tuesday, the 19th day of April instant, at Two o'clock in the afternoon, the MACHINERY and MATERIALS belonging to the Drakewells Tin and Copper Mining Company, with the legal or equitable interests of the company in the Leases or Sets on which the mine or mines belonging to the company known as Drakewells Mine are worked as a going concern.

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Situated in the Commune of MIGLUGLIA, formerly owned by Signori BAGLIONI and FRANZI.

The property will be put up at 150,000 fr.; deposit, 10,000 fr.

Conditions of sale are to be obtained of the Advocates, CARLO BATTAGLINI, Leone de Stoppani; and GIOVANNI SOLDATI, Lugano.

LEASING OF IRON MINES IN TUSCANY (ITALY).

Notice is hereby given, that the MINISTRY OF FINANCE, in ROME, has provisionally GRANTED the THREE YEARS LEASE of the IRON MINES IN ELBA, at a royalty of lire 5 Italian for every ton of mineral, either exported or otherwise utilised from the Islands of Elba and Giglio; and the public are informed that the Ministry is prepared to RECEIVE, up to Ten o'clock in the 16th inst., TENDERS of NOT LESS THAN ONE-TWENTIETH in EXCESS of that price.

Such tenders to be accompanied by the deposit at the Provincial Treasury in Rome of lire Italian 300,000.

ROBERT A. HEATH, Italian Consul General, London, 4th April, 1881, Royal Italian Consulate, 31, Old Jewry, E.C.

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Further particulars will appear in future advertisements, and plans and conditions of sale will be ready for issue by the 20th of March, to be had on application to Messrs. MALLETT BROTHERS, Chartered Accountants, 21, Collingwood-street, Newcastle-on-Tyne; Mr. THOMAS WETHERELL, Auctioneer, Durham; and of D. E. STANFORD, Esq., Solicitor, 21, Collingwood-street, Newcastle-on-Tyne.

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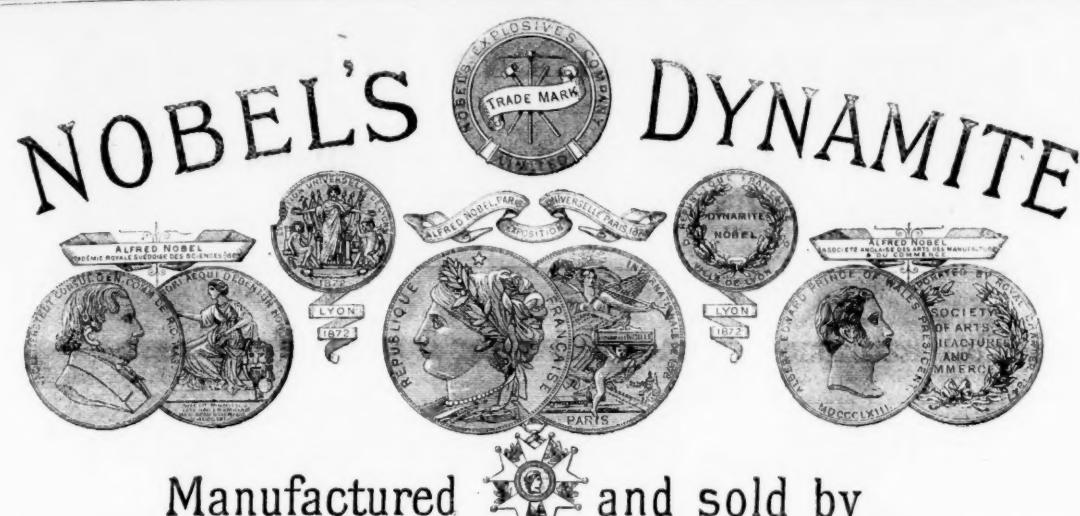
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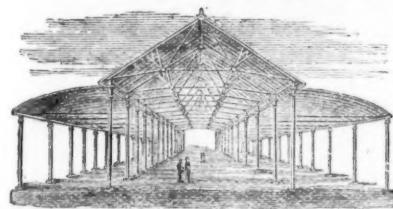
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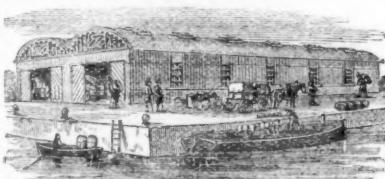
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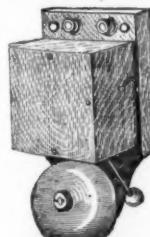
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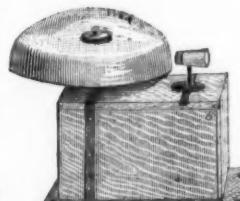
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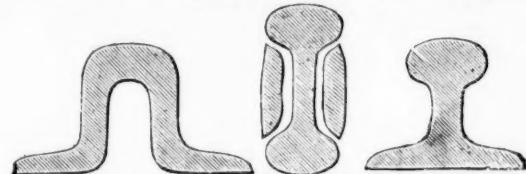
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The Gold Mining Trust Company (Limited) is established for the purpose of making a judicious selection of investments principally in the shares of Gold Mining Companies, and of dealing in the same.

It is of course well known that a great number of gold mining companies have been recently founded, and, from the avidity with which the shares have been subscribed, it is only natural to suppose that there may have been to some extent an absence of selection on the part of the public, unless all the companies attain the brilliant successes foreshadowed by the prospectus, a hope which, judging from past experience, it would be too sanguine to expect to be realised.

It should, however, be borne in mind that gold mining is not now the risky enterprise it has been in the past. Science has of late made such gigantic strides, and the machinery and processes employed in all descriptions of mining have been so vastly improved, that ores which a few years since could not be worked to any profit are now very valuable. At the present day, for instance, experts consider that in gold mining two pennyweights of that metal per ton are, under favourable conditions, more than ample to cover the ordinary cost of raising the quartz and extracting the gold. It will thus be seen what a field of profit is open to those who make their investments with caution.

It may fairly be anticipated that some of the companies will be highly successful, and others moderately so, whilst many must, it is feared, from the circumstances of their initiation, prove disastrous to their shareholders. Under these circumstances to distinguish be-

tween the different classes requires special qualifications which are not to be found combined in single individuals. There must be an impartial judgment; there must be a technical knowledge; and there must be an acquaintance with the circumstances attendant upon the foundation of all the companies under review.

The directors of this company have no interest whatever in any existing gold mining company, and while some have both practical and theoretical acquaintance with mining, others present at the board have sound business experience and knowledge, which will enable them to make such a selection of investments as will, with all reasonable certainty, assure to the shareholders of this company the large dividends attendant upon this extremely profitable class of securities, combined at the same time with an element of safety which is so rarely found associated.

A feature of considerable importance is the acquisition at the board of Mr. Alfred G. Lock, whose paper read before the Society of Arts on January 19, 1881, on "Causes of Success and Failure in Modern Gold Mining," and whose subsequent pamphlet entitled "Gold Mining from an Investor's Point of View," must have awakened the interest of every gold mining investor.

Due provision will be made that the area of investment shall be very widely extended, so that the security of the company shall be established on as broad a basis as is compatible with discretion. The great and guiding principle of the directors will be the careful distribution of the funds of the company among a number of different undertakings, so that an average may be arrived at, and the directors feel that, by the exercise of sufficient caution, not only in making the original investment, but also in watching the progress of each property, they need not unnecessarily imperil the money at their disposal in securing such handsome returns as are but rarely derived from joint-stock enterprise.

The directors feel themselves justified in anticipating that with the means of special knowledge and information accessible to them, they will be enabled to realise a very large amount of profit from the increased price of the shares bought by this company from time to time.

As an evidence of the faith of the directors in the future prosperity of the company, they are willing to forego all claim to remuneration for their services until the shareholders have received 7½ per cent. dividend on their shares.

The directors will be prepared to receive subscriptions for shares in the shares of other companies, but it must be understood that such subscriptions will be subject to the discretion of the directors as to the acceptance or otherwise of such securities.

Application will be promptly made to the Committee of the Stock Exchange for a quotation in their official list, so that a ready market may be always open both for the purchase and sale of the company's shares.

Where no allotment is made the amount paid on application will be returned in full.

No contracts have been entered into by or on behalf of the company.

Prospectuses and forms of application for shares may be obtained from the bankers, brokers, solicitors, auditors, and secretary, the last of whom will be glad to give the fullest information upon every point on application to him at the offices of the company, No. 31, Lombard-street, London, E.C.

30th March, 1881.